

FOSTER WHEELER ENVIRONMENTAL CORPORATION

**FOURTH LONG-TERM SOIL VAPOR  
SAMPLING RESULTS, JANUARY 2000**

**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
JET PROPULSION LABORATORY  
4800 Oak Grove Drive  
Pasadena, California 91109**



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**AT THE**

**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
JET PROPULSION LABORATORY**

4800 Oak Grove Drive  
Pasadena, California 91109

*Prepared by*



**FOSTER WHEELER ENVIRONMENTAL CORPORATION**

611 Anton Boulevard, Suite 800  
Costa Mesa, California 92626

April 2000

Jet Propulsion Laboratory  
California Institute of Technology  
4800 Oak Grove Drive  
Pasadena, California 91109-8099  
(818) 354-4321



November 2, 2000

Refer to: GEN20001102

NASA Management Office  
Attention: Peter Robles  
M/S: 180-801  
4800 Oak Grove Drive  
Pasadena, California 91109

**Subject: Long Term Quarterly Soil Vapor Monitoring Reports, Events 1 through 5.**

Dear Peter:

Enclosed are 16 copies of each of the subject reports for distribution.

If you have any questions, or need further information, please feel free to contact me at 818-354-0180.

Sincerely,

A handwritten signature in black ink, appearing to read "Charles L. Buril".

Charles L. Buril  
Environmental Affairs Office – Manager

C. J. Novelly

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## 1.0 INTRODUCTION

Presented in this report are the results of the fourth long-term soil vapor sampling event completed as part of the long-term monitoring program being conducted at the NASA-Jet Propulsion Laboratory (JPL) for Operable Unit 2 (OU-2). The purpose of this program is to monitor the horizontal and vertical distributions of volatile organic compound (VOC) vapors in the vadose zone beneath the JPL site. From January 17 through January 23, 2000, Foster Wheeler Environmental Corporation (Foster Wheeler) personnel collected soil-vapor samples from the deep soil vapor monitoring well Nos. 25 through 28 and Nos. 32 through 39 at the locations shown in Figure 1-1.

All soil vapor samples collected during the event were analyzed for VOCs by HP Labs in an on-site laboratory that is certified by the California Department of Health Services (CDHS). The analyses were performed in accordance with EPA Method 8010/8020 and the California Regional Water Quality Control Board, Los Angeles Region (RWQCB), protocols and guidance.

Sampling procedures are described in Section 2.0, and a summary of all VOCs detected during this fourth long-term soil vapor sampling event, including locations and depths, is contained in Section 3.0. The soil vapor data evaluation report for all samples analyzed during this sampling event is located in Appendix A and summarized in Section 4.0. Cited references are listed in Section 5.0. Laboratory reports for all samples analyzed, along with chain-of-custody forms, are included in Appendix B. The initial three-point calibration data and the daily calibration-verification standards for each day's sampling are also included in this appendix. Contained in Appendix C is a summary of soil-vapor results from all events conducted during the long-term monitoring program.

## 2.0 SOIL VAPOR SAMPLING PROCEDURES

During January 2000, soil-vapor samples were collected and analyzed from deep soil vapor monitoring well Nos. 25 through 28 and Nos. 32 through 39. A description of how the soil-vapor wells were constructed was presented in a previous report (FWENC, 2000a), and well construction details are summarized in Table 2-1. One hundred depth-specific vapor samples, including 16 collocated duplicate samples were collected and analyzed for 25 primary target VOC compounds in accordance with the RWQCB (1997) guidance.

Soil-vapor samples were withdrawn from the soil through the sampling tips and 1/8-inch-outside diameter (OD) Nylaflow® tubing using calibrated, gas-tight, 60-cubic-centimeter (cc) sterile syringes fitted with a three-way on-off valve. Prior to collecting the soil-vapor sample, four volumes of the length of the tubing were purged to flush the tubing and fill it with in-situ soil vapor. Since each foot of tubing has an internal volume of 1 cc, the total volume purged was easily measured with the calibrated syringes. Following purging, a 60-cc soil-vapor sample was collected in the syringe, the valve turned to the off position, and transferred immediately to the on-site mobile laboratory for analysis. During sampling, neither water vapor nor condensation was observed in the transparent sampling syringes. Because the purge and sample volumes were small, a vacuum pump was not required to evacuate the tubing or to collect a soil-vapor sample. To demonstrate reproducibility of results, a duplicate soil-vapor sample was collected and analyzed after every five environmental samples.

Samples collected were analyzed on-site in a mobile laboratory certified (Certification No. 1745) by the CDHS to perform analyses by EPA Methods 8010 and 8020 for the parameters listed in Table 2-2. The time between sample collection and analysis was, at most, only a few minutes.

### 3.0 ANALYTICAL RESULTS

The results from the remedial investigation (RI) for OU-2 indicated that four VOCs were more frequently detected in soil-vapor samples at elevated concentrations relative to other VOCs. These four VOCs are carbon tetrachloride (CCl<sub>4</sub>), 1,1,2-trichloro-1,2,2-trifluoroethane (Freon 113), trichloroethene (TCE), and 1,1-dichloroethene (1,1-DCE). Carbon tetrachloride and Freon 113 were detected in most soil-vapor samples where VOCs were present, and frequently the only VOCs detected. Carbon tetrachloride was usually detected at higher concentrations than Freon 113. The frequency of detection, concentrations, and horizontal and vertical distribution of these four major VOCs are thoroughly discussed and presented in the OU-2 RI report (FWENC, 1999a).

The VOCs most frequently detected during this fourth long-term sampling event were, as in the past, CCl<sub>4</sub>, Freon 113, TCE, and 1,1-DCE. In general, concentrations measured during this event are similar to those measured during the prior sampling event. Furthermore, many concentrations measured during this event are substantially lower than those measured during the OU-2 RI, probably as a result of the soil vapor extraction pilot test, which was shut down on September 29, 1999, and is currently on standby (FWENC, 1999b). Three other VOCs, chloroform, 1,1,1-trichloroethane (1,1,1-TCA), and trichlorofluoromethane (Freon 11) were also detected during this sampling event. Chloroform is as detected in six soil-vapor wells (Nos. 26, 33, 34, 36, 37, and 38), 1,1,1-TCA was detected in two wells (Nos. 33 and 36), and Freon 11 was detected in four wells (Nos. 27, 36, 37, and 38). Concentrations of these compounds were generally low relative to those of other compounds detected [chloroform: 1.3 to 16 micrograms per liter of vapor (µg/L-vapor); 1,1,1-TCA: 1.0 to 106 µg/L-vapor; Freon 11: 1.0 to 1.5 µg/L-vapor]. A summary of the analytical results for all samples collected during this sampling event is presented in Table 3-1, and the laboratory reports for each day's sampling are presented in Appendix B-1. Chain-of-custody forms are included in Appendix B-2. Data from all long-term monitoring events conducted to date are summarized in Appendix C.

Locations of detections with depth for CCl<sub>4</sub>, Freon 113, TCE, and 1,1-DCE are shown in Figures 3-1, 3-2, 3-3, and 3-4, respectively. Total VOC concentrations with depth are presented in Figure 3-5, and the estimated horizontal and vertical distribution of total VOCs along a section through the north-central part of the site (where VOC concentrations were found to be the highest during the OU-2 RI) is presented in Figure 3-6. Groundwater elevations shown in Figure 3-6 are based on monitoring well water-level information for December 16, 1999, that is contained in the groundwater monitoring report for November-December 1999 (FWENC, 2000b).

## 4.0 QUALITY ASSURANCE AND QUALITY CONTROL

Presented in this section is a brief summary of the quality assurance and quality control (QA/QC) procedures followed during the fourth long-term soil vapor sampling event. A more thorough discussion on the QA/QC processes and data evaluation are presented in Appendix A, Soil Vapor Data Evaluation Report.

All sample analyses were performed using an external, three-point standard calibration method (Appendix B-3). For most target analytes, both detectors on the gas chromatograph (GC) were calibrated over a range equivalent to 2 to 150 µg/L analyte in soil vapor. Analytical system performance was verified at the beginning of each analytical day with an "opening standard" and a "closing standard" after the last environmental sample analysis for the day. A "continuing standard" was analyzed after the tenth environmental sample run that day. If ten or fewer samples were analyzed during the day, the closing standard substituted for the continuing standard. Results of the daily opening, closing, and continuing (if applicable) standards are presented in Appendix B-4.

During each analytical day, the environmental sample analyses were bracketed by check standards which verified acceptable system performance for the analytes listed in the daily calibration data summary tables (Appendix B-4). Response factors (RF) calculated from the opening standard results were within  $\pm 15$  percent of the mean calibration factors calculated from initial calibration results. Results for closing standards and continuing standards were within  $\pm 20$  percent of initial calibration results, except for these continuing standards: 1,2-dichloroethane on January 17 [34.7 percent relative standard deviation (%RSD)], m&p-xylenes on January 19 (26.5 %RSD), and m&p-xylenes on January 20 (32.9 %RSD). Results for the compounds and dates listed above, should be qualified ( $J^+$ ) because of excessive instrumental drift. However, because of the positive bias, non-detects would not be qualified. Therefore, because none of these compounds were detected, no data were qualified because of standardization problems or instrumental drift. Percent differences between analyte-specific response factors were always within applicable control limits.

Field blanks of ambient air from inside the field laboratory trailer were analyzed immediately after the opening verification standard and were clean in all cases. No matrix spikes or laboratory replicates were required.

Three surrogate compounds (1,4-difluorobenzene, chlorobenzene, and 4-bromofluorobenzene) were injected into the GC along with the environmental samples as a QA/QC check on recovery limits. In accordance with RWQCB (1997) protocols, surrogate recoveries should be in the range of 75 to 125 percent. All surrogate recoveries obtained during this sampling event satisfied this criteria by a wide margin, usually within a recovery range of 86 to 110 percent.

No sample analysis data obtained during this sampling event were rejected as unusable. Overall, the assessment of soil vapor and corresponding control sample data indicate that data quality objectives were achieved in terms of precision, accuracy, representativeness, comparability, and completeness for all analytes sampled.

## 5.0 REFERENCES

1. FWENC (Foster Wheeler Environmental Corporation). 1999a. *Final Remedial Investigation Report for Operable Unit 2: Potential On-Site Contaminant Source Areas*. Volume 1. November.
2. FWENC (Foster Wheeler Environmental Corporation). 1999b. *Draft Feasibility Study Report for Operable Unit 2: Potential On-Site Contaminant Source Areas*. November.
3. FWENC (Foster Wheeler Environmental Corporation). 2000a. *First Long-Term Soil-Vapor Sampling Results, October 1998*. February.
4. FWENC (Foster Wheeler Environmental Corporation). 2000b. *Quarterly Groundwater Monitoring Results, November-December 1999*. March.
5. RWQCB (California Regional Water Quality Control Board, Los Angeles Region). 1997. *Interim Guidance for Active Soil Gas Investigation*. February 25.

## **TABLES**



**TABLE 2-1**  
**SUMMARY OF CONSTRUCTION DETAILS**  
**FOR DEEP SOIL VAPOR MONITORING WELLS**

Soil-Vapor Well Number	Date Drilling Completed	Date Vapor Well Installed	Drilling Method	Boring Depth (ft bgs)	Sampling Tip Number	Depth to Sampling Tip (ft bgs)	Elevation of Ground Surface (ft amsl)	Elevation of Soil Vapor Sampling Tip (ft amsl)
25	3/31/97	3/31/97	Sonic	202	1	20	1199.6	1179.6
					2	40		1159.6
					3	60		1139.6
					4	85		1114.6
					5	100		1099.6
					6	120		1079.6
					7	145		1054.6
					8	165		1034.6
					9	180		1019.6
					10	190		1009.6
26	3/27/97	3/28/97	Sonic	206	1	20	1201.8	1181.8
					2	35		1166.8
					3	55		1146.8
					4	80		1121.8
					5	100		1101.8
					6	115		1086.8
					7	140		1061.8
					8	160		1041.8
					9	180		1021.8
					10	195		1006.8
27	3/18/97	3/18/97	Sonic	214	1	20	1214.2	1194.2
					2	35		1179.2
					3	60		1154.2
					4	85		1129.2
					5	100		1114.2
					6	120		1094.2
					7	140		1074.2
					8	160		1054.2
					9	180		1034.2
					10	205		1009.2

**TABLE 2-1**  
**SUMMARY OF CONSTRUCTION DETAILS**  
**FOR DEEP SOIL VAPOR MONITORING WELLS**

Soil-Vapor Well Number	Date Drilling Completed	Date Vapor Well Installed	Drilling Method	Boring Depth (ft bgs)	Sampling Tip Number	Depth to Sampling Tip (ft bgs)	Elevation of Ground Surface (ft amsl)	Elevation of Soil Vapor Sampling Tip (ft amsl)
28	3/13/97	3/14/97	Sonic	179	1	20	1176.7	1156.7
					2	45		1131.7
					3	65		1111.7
					4	80		1096.7
					5	105		1071.7
					6	120		1056.7
					7	140		1036.7
					8	160		1016.7
32	3/29/98	3/29/98	Sonic	210	1	25	1206.6	1181.6
					2	40		1166.6
					3	55		1151.6
					4	70		1136.6
					5	90		1116.6
					6	115		1091.6
					7	135		1071.6
					8	155		1051.6
					9	180		1026.6
					10	195		1011.6
33	3/31/98	4/1/98	Sonic	213	1	20	1214.0	1194.0
					2	40		1174.0
					3	60		1154.0
					4	85		1129.0
					5	105		1109.0
					6	120		1094.0
					7	140		1074.0
					8	160		1054.0
					9	180		1034.0
					10	200		1014.0

**TABLE 2-1**  
**SUMMARY OF CONSTRUCTION DETAILS**  
**FOR DEEP SOIL VAPOR MONITORING WELLS**

Soil-Vapor Well Number	Date Drilling Completed	Date Vapor Well Installed	Drilling Method	Boring Depth (ft bgs)	Sampling Tip Number	Depth to Sampling Tip (ft bgs)	Elevation of Ground Surface (ft amsl)	Elevation of Soil Vapor Sampling Tip (ft amsl)
34	4/8/98	4/8/98	Sonic	135	1	20	1164.3	1144.3
					2	35		1129.3
					3	50		1114.3
					4	65		1099.3
					5	80		1084.3
					6	95		1069.3
					7	108		1056.3
					8	118		1046.3
35	4/14/98	4/14/98	Sonic	162.5	1	20	1183.2	1163.2
					2	35		1148.2
					3	50		1133.2
					4	60		1123.2
					5	80		1103.2
					6	95		1088.2
					7	110		1073.2
					8	125		1058.2
					9	140		1043.2
					10	155		1028.2
36	3/27/98	3/27/98	Sonic	117	1	20	1232.8	1212.8
					2	35		1197.8
					3	55		1177.8
					4	75		1157.8
					5	92		1140.8
37	4/7/98	4/7/98	Sonic	193	1	25	1195.7	1170.7
					2	40		1155.7
					3	60		1135.7
					4	80		1115.7
					5	100		1095.7
					6	120		1075.7
					7	140		1055.7

**TABLE 2-1**  
**SUMMARY OF CONSTRUCTION DETAILS**  
**FOR DEEP SOIL VAPOR MONITORING WELLS**

Soil-Vapor Well Number	Date Drilling Completed	Date Vapor Well Installed	Drilling Method	Boring Depth (ft bgs)	Sampling Tip Number	Depth to Sampling Tip (ft bgs)	Elevation of Ground Surface (ft amsl)	Elevation of Soil Vapor Sampling Tip (ft amsl)
38	4/15/98	4/15/98	Sonic	178.5	8	155	1185.6	1040.7
					9	170		1025.7
					10	185		1010.7
					1	25		1160.6
					2	45		1140.6
					3	65		1120.6
					4	80		1105.6
					5	95		1090.6
					6	110		1075.6
					7	125		1060.6
39	4/17/98	4/17/98	Sonic	138	8	140	1144.1	1045.6
					9	155		1030.6
					10	170		1015.6
					1	20		1124.1
					2	35		1109.1
					3	50		1094.1
					4	70		1074.1
					5	85		1059.1
					6	100		1044.1
					7	110		1034.1
					8	120		1024.1
					9	130		1014.1

**Notes:**

amsl - Above mean sea level.  
bgs - Below ground surface.  
ft - Feet.

**TABLE 2-2**  
**SUMMARY OF PRIMARY TARGET COMPOUNDS**  
**FOR ANALYSES PERFORMED ON SOIL-VAPOR SAMPLES**

Parameter	Method	Container	Maximum Holding Time	Detection Limits
<b>Volatile Organic Compounds</b>	8010/8020	Syringe	15 minutes	
Benzene				1.0 µg/L
Vinyl chloride				1.0 µg/L
Carbon tetrachloride				1.0 µg/L
1,2-Dichloroethane				1.0 µg/L
Trichloroethene				1.0 µg/L
1,1-Dichloroethene				1.0 µg/L
1,1,1-Trichloroethane				1.0 µg/L
Bromomethane				1.0 µg/L
Chloroethane				1.0 µg/L
Chloroform				1.0 µg/L
trans-1,2-Dichloroethene				1.0 µg/L
cis-1,2-Dichloroethene				1.0 µg/L
Dichloromethane				1.0 µg/L
1,1-Dichloroethane				1.0 µg/L
Ethylbenzene				1.0 µg/L
1,1,2-Trichloroethane				1.0 µg/L
1,1,1,2-Tetrachloroethane				1.0 µg/L
1,1,2,2-Tetrachloroethane				1.0 µg/L
Tetrachloroethene				1.0 µg/L
Toluene				1.0 µg/L
m,p-Xylenes				1.0 µg/L
o-Xylene				1.0 µg/L
Trichlorofluoromethane (Freon 11)				1.0 µg/L
Dichlorodifluoromethane (Freon 12)				1.0 µg/L
Trichlorotrifluoroethane (Freon 113)				1.0 µg/L

TABLE 3-1

**SUMMARY OF SOIL-VAPOR RESULTS**  
**FOURTH LONG-TERM SAMPLING EVENT**  
(Concentrations in µg/L-vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl <sub>4</sub>	Freon 113	TCE	1,1-DCE	Chloroform	1,1,1-TCA	Freon 11
25	20	1/17/00	VPSV-918	ND	ND	ND	ND	ND	ND	ND
25	40	1/17/00	VPSV-919	ND	ND	ND	ND	ND	ND	ND
25	60	1/17/00	NS	P	P	P	P	P	P	P
25	85	1/17/00	NS	P	P	P	P	P	P	P
25	100	1/17/00	NS	P	P	P	P	P	P	P
25	120	1/17/00	NS	P	P	P	P	P	P	P
25	145	1/17/00	VPSV-920	1.0	ND	ND	ND	ND	ND	ND
25	165	1/17/00	NS	P	P	P	P	P	P	P
25	180	1/17/00	VPSV-921	1.0	1.5	ND	ND	ND	ND	ND
25	190	1/17/00	VPSV-922	1.2	ND	ND	ND	ND	ND	ND
25	190	1/17/00	VPSV-923(DUP)	1.1	ND	ND	ND	ND	ND	ND
26	20	1/17/00	NS	P	P	P	P	P	P	P
26	35	1/17/00	VPSV-924	ND	ND	1.5	ND	ND	ND	ND
26	55	1/17/00	NS	P	P	P	P	P	P	P
26	80	1/17/00	NS	P	P	P	P	P	P	P
26	100	1/17/00	NS	P	P	P	P	P	P	P
26	115	1/17/00	VPSV-925	6.9	ND	ND	ND	ND	ND	ND
26	140	1/17/00	VPSV-926	11	1.2	1.7	1.1	1.5	ND	ND
26	160	1/17/00	VPSV-927	11	2.9	1.8	1.3	1.3	ND	ND
26	180	1/17/00	VPSV-928	5.4	3.5	5.7	ND	ND	ND	ND
26	180	1/17/00	VPSV-929(DUP)	4.9	3.6	5.5	ND	ND	ND	ND
26	195	1/17/00	NS	P	P	P	P	P	P	P
27	20	1/18/00	VPSV-930	ND	ND	ND	ND	ND	ND	ND
27	35	1/18/00	VPSV-931	ND	ND	ND	ND	ND	ND	ND
27	60	1/18/00	VPSV-932	ND	3.4	ND	ND	ND	ND	ND
27	85	1/18/00	VPSV-933	3.0	2.6	ND	ND	ND	ND	ND
27	100	1/18/00	VPSV-934	13	1.4	ND	ND	ND	ND	ND
27	100	1/18/00	VPSV-935(DUP)	15	1.7	ND	ND	ND	ND	ND
27	120	1/18/00	VPSV-936	1.6	ND	ND	ND	ND	ND	ND

TABLE 3-1

**SUMMARY OF SOIL-VAPOR RESULTS**  
**FOURTH LONG-TERM SAMPLING EVENT**  
(Concentrations in µg/L-vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl <sub>4</sub>	Freon 113	TCE	1,1-DCE	Chloroform	1,1,1-TCA	Freon 11
27	140	1/18/00	VPSV-937	10	2.1	ND	ND	ND	ND	ND
27	160	1/18/00	VPSV-938	2.5	ND	ND	ND	ND	ND	ND
27	180	1/18/00	VPSV-939	27	2.8	2.6	ND	ND	ND	ND
27	205	1/18/00	VPSV-940	11	5.4	2.9	ND	ND	ND	1.2
27	205	1/18/00	VPSV-941(DUP)	9.2	5.3	2.2	ND	ND	ND	1.2
28	20	1/18/00	VPSV-942	ND	ND	ND	ND	ND	ND	ND
28	45	1/18/00	NS	P	P	P	P	P	P	P
28	65	1/18/00	NS	P	P	P	P	P	P	P
28	80	1/18/00	VPSV-943	ND	ND	ND	ND	ND	ND	ND
28	105	1/18/00	VPSV-944	1.1	ND	ND	ND	ND	ND	ND
28	120	1/18/00	NS	P	P	P	P	P	P	P
28	140	1/18/00	NS	P	P	P	P	P	P	P
28	160	1/18/00	NS	P	P	P	P	P	P	P
32	25	1/21/00	VPSV-984	ND	ND	ND	ND	ND	ND	ND
32	40	1/21/00	VPSV-985	ND	ND	ND	ND	ND	ND	ND
32	55	1/21/00	VPSV-986	ND	ND	ND	ND	ND	ND	ND
32	70	1/21/00	VPSV-987	ND	2.7	ND	ND	ND	ND	ND
32	90	1/21/00	VPSV-988	ND	ND	ND	ND	ND	ND	ND
32	90	1/21/00	VPSV-989(DUP)	ND	ND	ND	ND	ND	ND	ND
32	115	1/21/00	NS	P	P	P	P	P	P	P
32	135	1/21/00	NS	P	P	P	P	P	P	P
32	155	1/21/00	VPSV-990	22	51	ND	ND	ND	ND	ND
32	180	1/21/00	VPSV-991	1.6	ND	1.0	ND	ND	ND	ND
32	195	1/21/00	VPSV-992	ND	ND	ND	ND	ND	ND	ND
33	20	1/19/00	VPSV-945	ND	4.2	ND	ND	ND	ND	ND
33	40	1/19/00	VPSV-946	6.1	86	7.7	38	ND	1.0	ND
33	40	1/19/00	VPSV-947(DUP)	6.0	92	6.6	39	ND	1.1	ND
33	60	1/19/00	VPSV-948	14	4.1	2.1	5.9	ND	ND	ND

TABLE 3-1

**SUMMARY OF SOIL-VAPOR RESULTS**  
**FOURTH LONG-TERM SAMPLING EVENT**  
(Concentrations in µg/L-vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl <sub>4</sub>	Freon 113	TCE	1,1-DCE	Chloroform	1,1,1-TCA	Freon 11
33	85	1/19/00	VPSV-949	33	7.0	ND	4.7	ND	ND	ND
33	105	1/19/00	VPSV-950	69	18	ND	4.3	ND	ND	ND
33	120	1/19/00	VPSV-951	101	17	ND	6.5	ND	ND	ND
33	140	1/19/00	VPSV-952	19	6.7	ND	1.5	5.6	ND	ND
33	140	1/19/00	VPSV-953(DUP)	17	6.5	ND	1.3	5.4	ND	ND
33	160	1/19/00	NS	P	P	P	P	P	P	P
33	180	1/19/00	NS	P	P	P	P	P	P	P
33	200	1/19/00	VPSV-954	1.8	ND	ND	ND	ND	ND	ND
34	20	1/20/00	VPSV-969	ND	ND	ND	ND	ND	ND	ND
34	35	1/20/00	VPSV-970	4.7	ND	ND	ND	ND	ND	ND
34	35	1/20/00	VPSV-971(DUP)	4.5	ND	ND	ND	ND	ND	ND
34	50	1/20/00	NS	P	P	P	P	P	P	P
34	65	1/20/00	VPSV-972	ND	ND	ND	ND	ND	ND	ND
34	80	1/20/00	VPSV-973	ND	ND	ND	ND	ND	ND	ND
34	95	1/20/00	VPSV-974	ND	ND	ND	ND	ND	ND	ND
34	108	1/20/00	VPSV-975	14	ND	ND	ND	ND	ND	ND
34	118	1/20/00	VPSV-976	53	4.4	ND	1.5	4.0	ND	ND
34	118	1/20/00	VPSV-977(DUP)	48	4.2	ND	1.5	3.3	ND	ND
35	20	1/20/00	VPSV-960	ND	ND	ND	ND	ND	ND	ND
35	35	1/20/00	VPSV-961	ND	ND	ND	ND	ND	ND	ND
35	50	1/20/00	NS	P	P	P	P	P	P	P
35	60	1/20/00	VPSV-962	ND	ND	ND	ND	ND	ND	ND
35	80	1/20/00	VPSV-963	ND	ND	ND	ND	ND	ND	ND
35	95	1/20/00	VPSV-964	1.3	ND	ND	ND	ND	ND	ND
35	95	1/20/00	VPSV-965(DUP)	1.5	ND	ND	ND	ND	ND	ND
35	110	1/20/00	VPSV-966	ND	ND	ND	ND	ND	ND	ND
35	125	1/20/00	VPSV-967	ND	1.4	ND	ND	ND	ND	ND
35	140	1/20/00	VPSV-968	8.5	15	2.4	ND	ND	ND	ND
35	155	1/20/00	NS	P	P	P	P	P	P	P



TABLE 3-1

**SUMMARY OF SOIL-VAPOR RESULTS  
FOURTH LONG-TERM SAMPLING EVENT**  
(Concentrations in µg/L-vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl <sub>4</sub>	Freon 113	TCE	1,1-DCE	Chloroform	1,1,1-TCA	Freon 11
36	20	1/19/00	NS	P	P	P	P	P	P	P
36	35	1/19/00	VPSV-955	89	1.2	23	3.3	2.8	55	ND
36	55	1/19/00	VPSV-956	178	2.3	44	7.0	2.3	106	ND
36	75	1/19/00	VPSV-957	66	4.6	5.0	3.8	11	26	1.3
36	92	1/19/00	VPSV-958	24	8.1	ND	2.4	14	2.0	ND
36	92	1/19/00	VPSV-959(DUP)	23	8.2	ND	2.6	16	1.7	ND
37	25	1/21/00	VPSV-978	ND	ND	ND	ND	ND	ND	ND
37	40	1/21/00	VPSV-979	2.8	1.1	ND	ND	ND	ND	ND
37	60	1/21/00	VPSV-980	ND	ND	ND	ND	ND	ND	ND
37	80	1/21/00	VPSV-981	1.9	ND	ND	ND	ND	ND	ND
37	100	1/21/00	VPSV-982	15	3.0	3.4	1.2	1.7	ND	ND
37	100	1/21/00	VPSV-983(DUP)	13	3.1	2.6	1.3	1.5	ND	ND
37	120	1/22/00	VPSV-993	8.8	3.7	3.8	1.7	1.9	ND	1.6
37	140	1/22/00	VPSV-994	4.1	2.6	ND	1.4	ND	ND	ND
37	140	1/22/00	VPSV-995(DUP)	4.3	2.5	ND	1.2	ND	ND	ND
37	155	1/22/00	VPSV-996	5.8	2.2	ND	1.3	ND	ND	1.1
37	170	1/22/00	VPSV-997	6.0	2.3	1.3	1.6	ND	ND	1.1
37	185	1/22/00	VPSV-998	11	5.2	3.4	1.9	ND	ND	1.1
38	25	1/22/00	VPSV-999	ND	ND	ND	ND	ND	ND	ND
38	45	1/22/00	VPSV-1000	ND	ND	ND	ND	ND	ND	ND
38	45	1/22/00	VPSV-1001(DUP)	ND	ND	ND	ND	ND	ND	ND
38	65	1/22/00	VPSV-1002	ND	ND	ND	ND	ND	ND	ND
38	80	1/22/00	VPSV-1003	ND	ND	ND	ND	ND	ND	ND
38	95	1/22/00	NS	P	P	P	P	P	P	P
38	110	1/22/00	VPSV-1004	8.8	6.0	1.5	ND	1.7	ND	ND
38	125	1/22/00	VPSV-1005	4.5	4.6	ND	ND	ND	ND	ND
38	140	1/22/00	NS	W	W	W	W	W	W	W
38	155	1/22/00	VPSV-1006	6.6	4.0	1.0	1.3	1.3	ND	1.5

TABLE 3-1

**SUMMARY OF SOIL-VAPOR RESULTS  
FOURTH LONG-TERM SAMPLING EVENT**  
(Concentrations in µg/L-vapor)

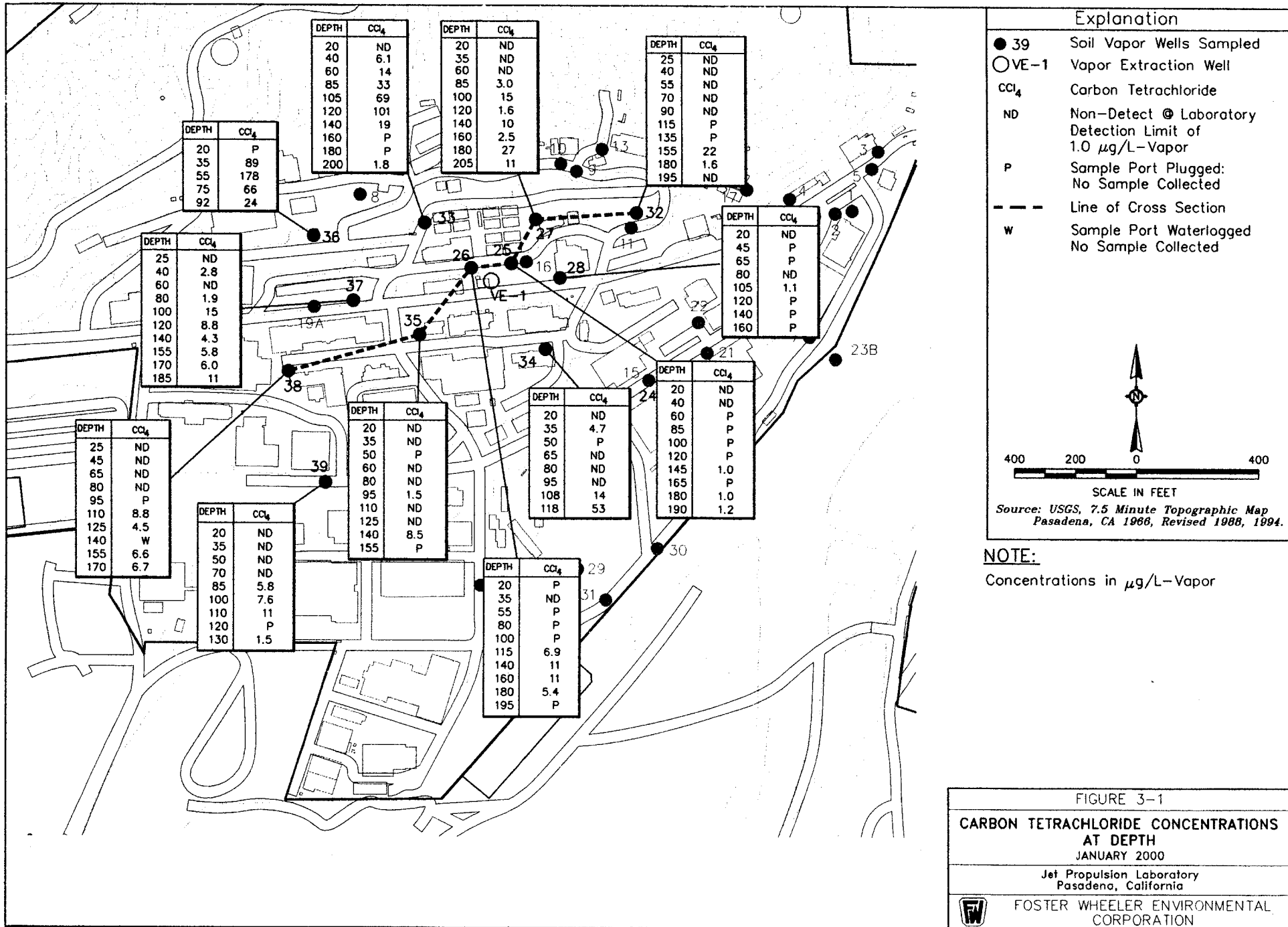
Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl <sub>4</sub>	Freon 113	TCE	1,1-DCE	Chloroform	1,1,1-TCA	Freon 11
38	155	1/22/00	VPSV-1007(DUP)	6.6	4.1	1.0	1.3	1.5	ND	1.5
38	170	1/22/00	VPSV-1008	6.7	6.3	3.2	1.4	ND	ND	1.0
39	20	1/23/00	VPSV-1009	ND	ND	ND	ND	ND	ND	ND
39	35	1/23/00	VPSV-1010	ND	ND	ND	ND	ND	ND	ND
39	50	1/23/00	VPSV-1011	ND	ND	ND	ND	ND	ND	ND
39	70	1/23/00	VPSV-1012	ND	ND	ND	ND	ND	ND	ND
39	70	1/23/00	VPSV-1013(DUP)	ND	ND	ND	ND	ND	ND	ND
39	85	1/23/00	VPSV-1014	5.8	44	1.7	ND	ND	ND	ND
39	100	1/23/00	VPSV-1015	7.6	51	2.3	ND	ND	ND	ND
39	110	1/23/00	VPSV-1016	11	52	2.8	ND	ND	ND	ND
39	120	1/23/00	NS	P	P	P	P	P	P	P
39	130	1/23/00	VPSV-1017	1.5	7.9	10	ND	ND	ND	ND

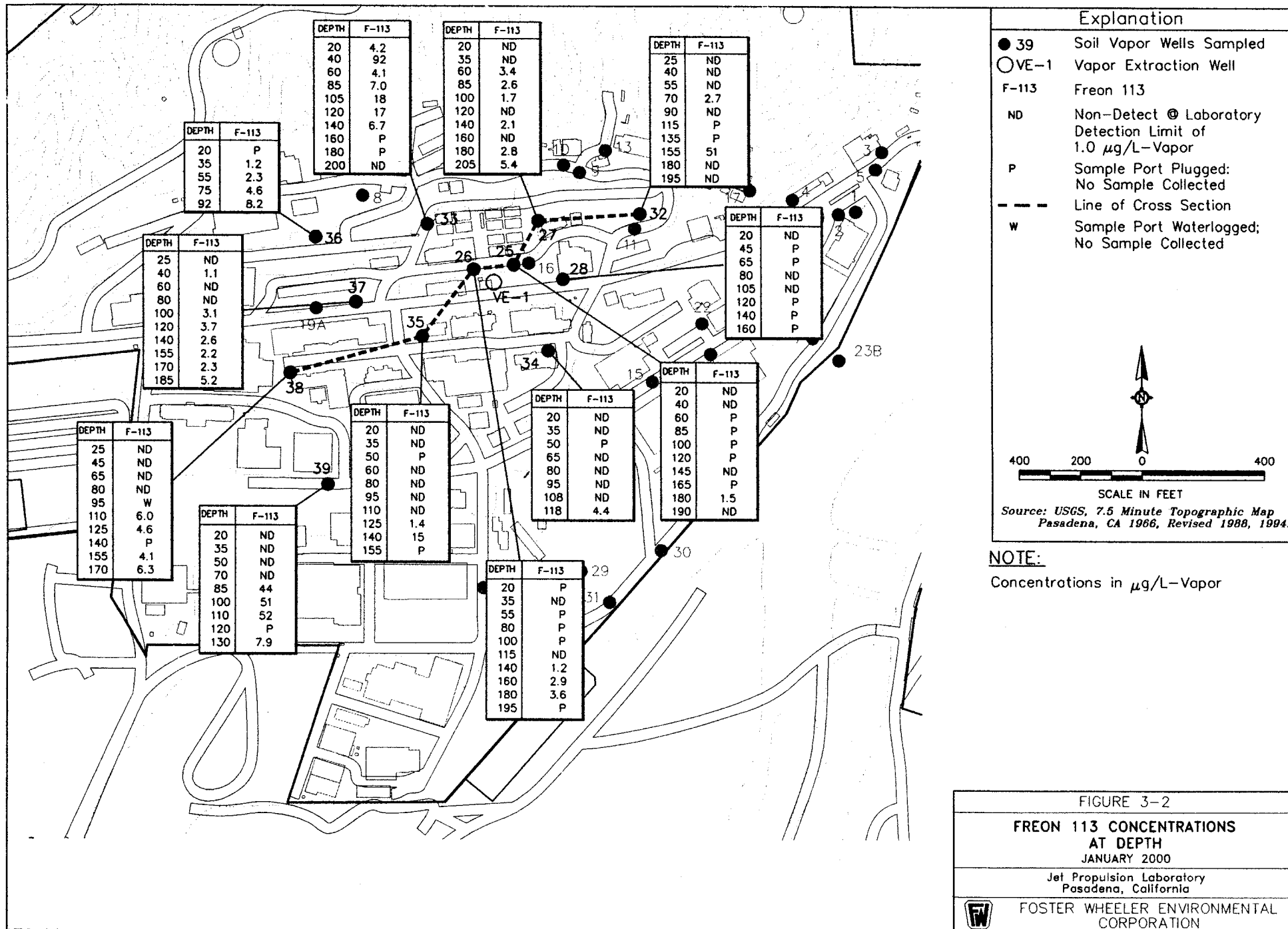
**Notes:**

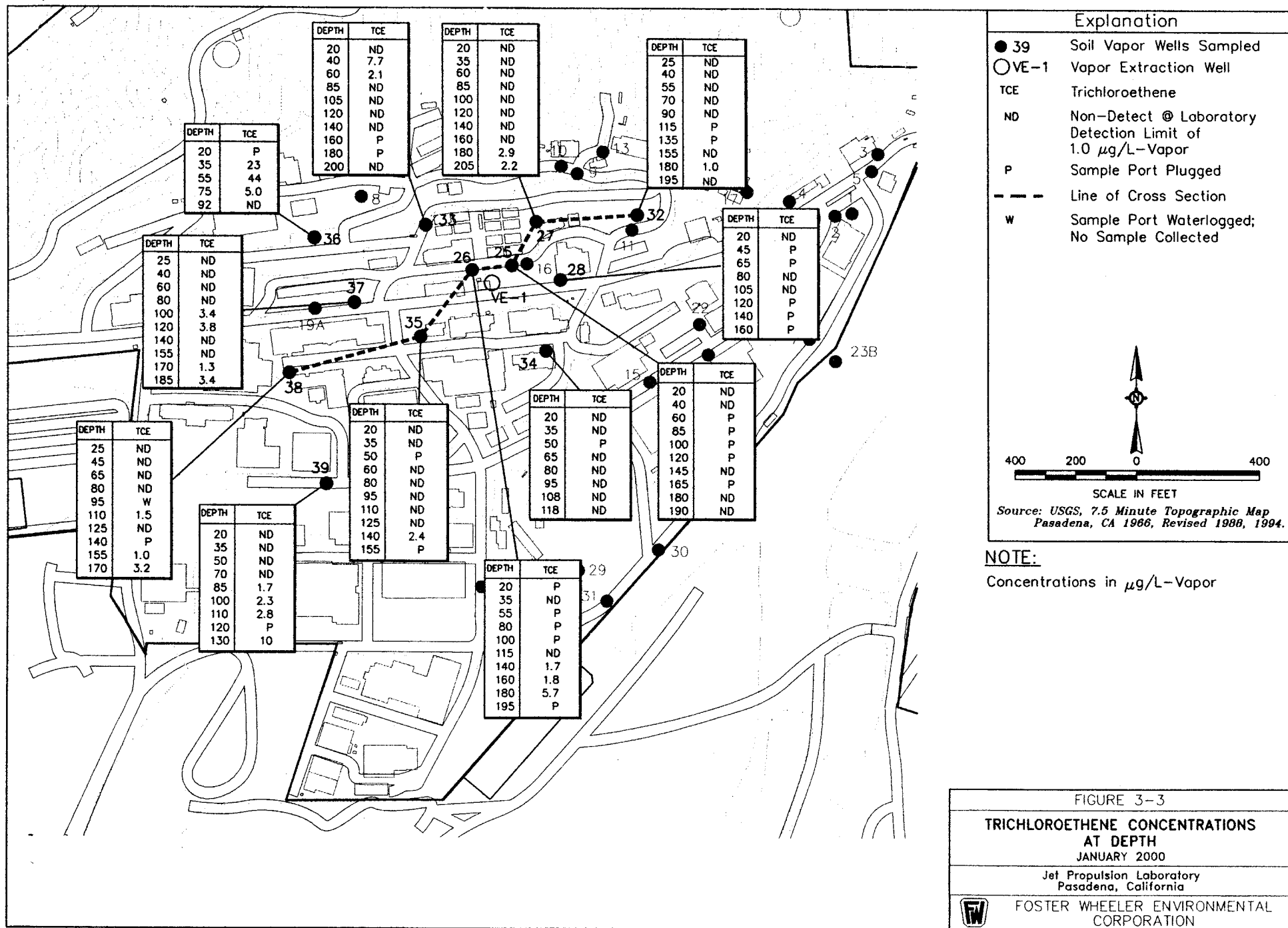
- bgs - Below ground surface.
- DUP - Duplicate samples.
- ft - feet.
- ND - Not detected.
- NS - Not sampled.
- P - Sampling port plugged.
- W - Sampling port inundated with water.

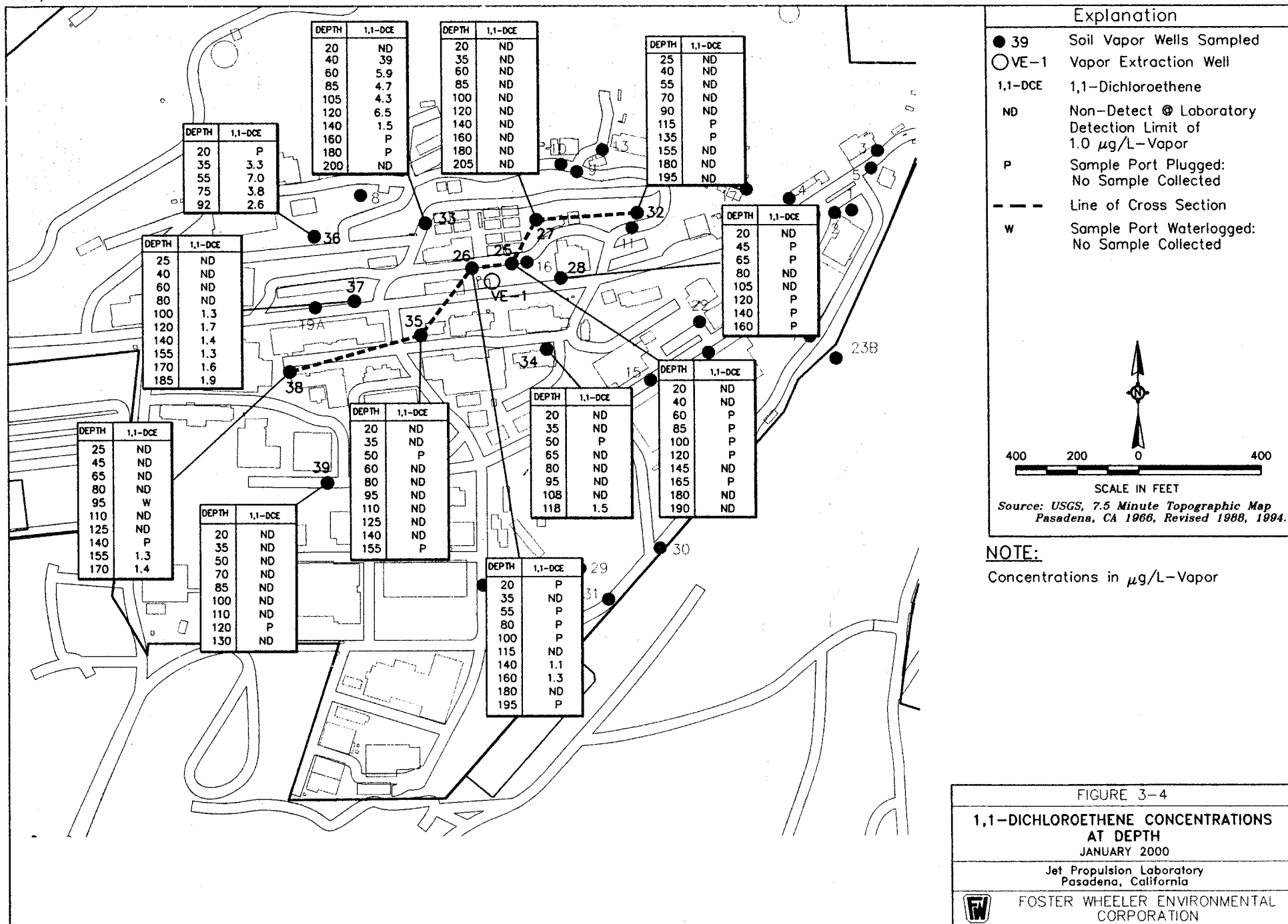
## **FIGURES**



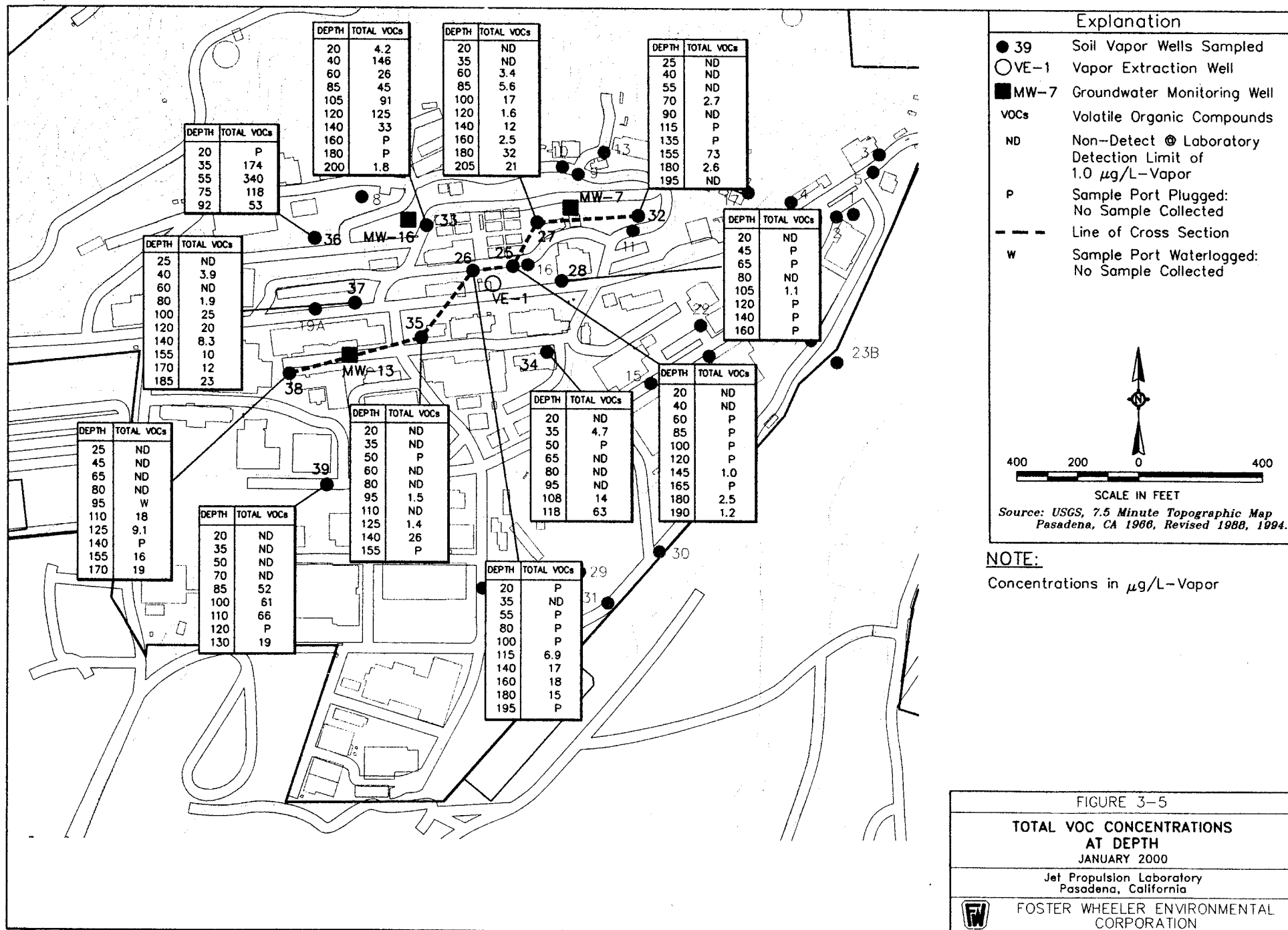


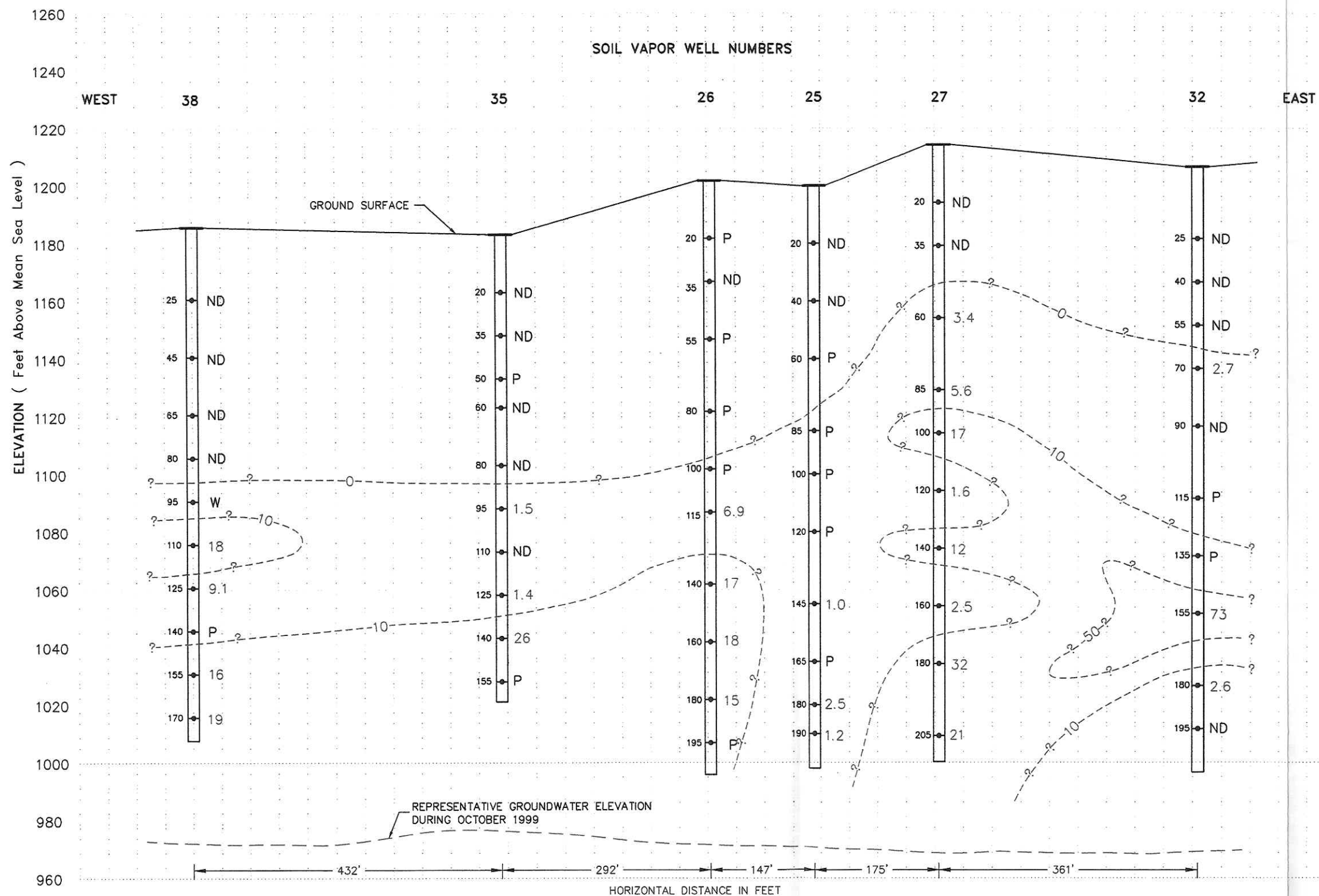












# Explanation

25- Soil Vapor Sample Point and Depth  
2.7 Concentrations of Total VOCs  
(  $\mu\text{g/L}$ -Vapor)

VOCs Volatile Organic Compounds

ND Non-Detect @ Laboratory Detection  
Limit of 1.0  $\mu\text{g/L}$ -Vapor

P Sample Port Plugged; No Sample  
Collected

W Sample Port Waterlogged; No Sample  
Collected

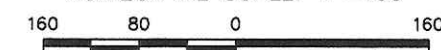
## Contours:

1. Intervals in 10 and 50  $\mu\text{g/L}$ -Vapor.
2. Queried where spatial control is lacking.

## Note:

Location of cross-section is shown on  
Figures 3-1 through 3-5.

HORIZONTAL SCALE: 1"=160'



VERTICAL SCALE: 1"=40'

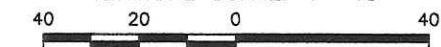


FIGURE 3-6

REPRESENTATIVE HORIZONTAL AND VERTICAL  
DISTRIBUTION OF TOTAL VOCs DURING THE FOURTH  
LONG-TERM SOIL VAPOR SAMPLING EVENT  
JANUARY 2000

Jet Propulsion Laboratory  
Pasadena, California



FOSTER WHEELER ENVIRONMENTAL  
CORPORATION

**APPENDIX A**

**SOIL VAPOR DATA EVALUATION REPORT**

**FOURTH LONG-TERM SAMPLING EVENT**

# SOIL VAPOR DATA EVALUATION REPORT

## FOURTH LONG-TERM SAMPLING EVENT

### I. INTRODUCTION

Summarized in this report is Foster Wheeler Environmental's review and assessment of the analytical data package generated from on-site gas chromatographic analyses of soil vapor samples that were collected by Foster Wheeler during mid-January of 2000, from the JPL site near Pasadena, California. The field sampling and analytical work was performed under a long-term program of quarterly soil vapor collection and testing. On-site analysis for volatile organic compounds (VOCs) was performed by HP Labs in their DOHS-certified mobile laboratory by Allen Glover with internal data review conducted by Dr. James Picker, both of HP Labs. The resulting final data packages were carefully reviewed by Foster Wheeler Environmental's Principal Scientist/Project Chemist who prepared this summary report.

During January 17-23 of 2000, 12 Operable Unit 2 (OU-2) deep soil vapor wells (Wells #25 through #28 and Wells #32 through #39) were sampled. Eighty-five depth-specific vapor samples plus 15 collocated field duplicates, a total of 100 samples, were successfully collected. However, at 26 locations, despite repeated efforts to clear the sampling line, no vapor sample could be obtained because of plugged tips on the installed sample probes. Location VPSV-982 (100' depth) had to be re-sampled three times at because of power surges that affected the GC system. Therefore, field conditions were not the same as at the other sampling locations where vapor samples were analyzed immediately after the first purge. How this might have affected results obtained at VPSV-982 is unknown, but is expected to bias the data low, if at all.

Once collected, each of the 100 samples of soil vapor (VPSV-918 through VPSV-1017) was immediately analyzed for a predetermined list of 25 target VOCs plus three surrogates. The time between sample collection and analysis was only a few minutes. In addition, at the beginning of each work day, a method/equipment blank was prepared by collecting ambient lab air through the field sampling apparatus. This method blank was run immediately prior to analyzing the environmental samples.

Listed in Table 3-1 are the laboratory results for all samples analyzed during this quarterly round of long-term soil vapor monitoring. Also included in this table are the corresponding soil vapor well numbers and depths from which each identified vapor sample was collected. This table should provide the reader with sufficient information to determine exactly where each sample was obtained, and also identify the collocated field duplicate samples (labeled DUP).

## II. GUIDELINES USED FOR THIS REVIEW

Soil vapor data review was performed to assess and evaluate adherence to the QA/QC and Reporting Requirements for Soil Gas Investigation, protocols established by the California Regional Water Quality Control Board - Los Angeles Region, and general quality control requirements and good laboratory practices contained in the current reference methods for this analysis (8000B & 8021) published in Test Methods for Evaluating Solid Wastes-Physical/Chemical Methods, SW-846, Office of Solid Waste and Emergency Response, USEPA, Washington, DC, 3rd Edition, September 1986 (including Update IIB, January 1995).

There are some constraints imposed by the nature of any vapor matrix that limit the types of control samples that can be run. Where discrepancies were noted, the potential impact on data reliability is discussed later in the report. As had been requested, data tables that summarized the laboratory's external calibration and internal control sample results were included in this package. In addition, the package contained copies of individual chromatograms.

## III. CHROMATOGRAPHIC PERFORMANCE

All sample analyses were performed using an external, three-point standard calibration method. For most analytes, both Shimadzu gas chromatograph detectors (Hall & PID) were calibrated over a range equivalent to 2 to 150 µg/L-vapor. Analytical system performance was verified at the beginning of each analytical day with an "opening standard", and checked again at the end of the day with a "closing standard". Usually, a "calibration verification standard", was analyzed after approximately the tenth environmental sample run that day. Both closing and calibration verification standards were prepared from a different batch or chemical lot number than the parent standard used to make up the daily opening standard. All check standards were made up to the mid-point calibration concentration (equivalent to 20 µg/L-vapor for most analytes). During seven days of testing, the calibration of HP Lab's Shimadzu analytical system was not altered, updated or otherwise adjusted.

The initial three-point calibration summary for this data package provides the average analyte-specific calibration factors used to quantify subsequent peak area responses from the field samples. System precision was evaluated in terms of the percent relative standard deviation (%RSD) among calibration factors calculated for each of the three standard concentrations for a particular analyte. Calibration precision was satisfactory (<20 %RSD), except for chloromethane, whose %RSD was 28.7 percent, and dichlorodifluoromethane (Freon-12), whose %RSD was 27.1 percent. However, in the case of Freon-12, the RWQCB guidance for initial calibration allows a maximum %RSD of 30 percent for this compound. Because a chloromethane QC limit is not specified, and chloromethane is a similar gaseous compound to Freon-12, a 30-%RSD precision limit is also applied to the initial chloromethane calibration data. Using these RWQCB guidelines, no calibration discrepancies were noted, and no data warranted qualification.

During each analytical day, the environmental sample analyses were bracketed by check standards which verified system performance for the analytes listed in the QA/QC - Calibration Data Summary Tables. Calibration factors (CF) calculated from opening standard results were always within  $\pm 15$  percent of the mean calibration factors calculated from initial calibration results. Closing standards, calibration verification standards, and laboratory control sample (LCS) results were always within  $\pm 20$  percent of initial calibration results except for:

**1,2-Dichloroethane**, whose %RSD was 34.7 percent on the continuing standard for January 17  
**m&p-Xylenes**, whose %RSD was 26.5 percent on the continuing standard for January 19  
**m&p-Xylenes**, whose %RSD was 32.9 percent on the continuing standard for January 20

Applying the RWQCB guidelines, all positive 1,2-dichloroethane results generated on January 17, and all positive m&p-xylenes results generated on January 19-20 should be qualified ( $J^+$ ) because of excessive instrumental drift as evaluated from calibration verification data. In this case, however, because of the positive bias, non-detects would not be qualified. Therefore, since neither xylenes nor 1,2-dichloroethane was actually detected in any field samples, none of these data required qualification. However, the laboratory should have recognized these early continuing calibration problems and taken appropriate corrective action.

Method/equipment blanks were analyzed immediately after the opening verification standard and were clean in all cases.

Instrument response (in terms of area counts) to the environmental soil vapor samples always fell within the working calibration range of the GC.

In qualitative chromatographic terms such as peak shape, compound separation, stability of instrumental response, baseline appearance, drift and sensitivity, the quality of the chromatograms in these data packages compared favorably with the general criteria for single laboratory performance as published in the method references.

#### IV. REQUIRED INSTRUMENT QC

Based on general assessment criteria for GC analysis with non-MS detectors, RWQCB guidelines, and requirements in SW-846-Method 8021, laboratory data packages were evaluated as follows:

- *Linearity of initial calibration curve*: For each target analyte, the %RSD among response factors calculated from the three calibration standards was less than 20%, indicative of a linear relationship. In addition, based on the 3-point initial calibration data summary table provided by HP labs, linear correlation coefficients were greater than 0.995 for all target analytes.
- *Retention time (RT) windows*: Calculation of RT windows is not addressed under RWQCB guidelines. Retention time windows appeared stable and consistent. How acceptable ranges for RT windows were established, and the magnitude of temporal variation allowed was not explained in the data package.

- *Establishment and verification of calibration factors:* Based on initial calibration data, CF values were correctly calculated. Data from calibration verification standards indicated a stable analytical system.

## V. MATRIX SPIKE AND LABORATORY CONTROL SAMPLES

The mixed-gas matrix collected from vapor monitoring wells was assumed not significantly to affect method performance in terms of detection limits, precision and accuracy. No matrix spike data were reported to verify this assumption and no lab replicates were run for internal lab precision assessment. However, data on 15 pairs of field duplicates were generated, and although the variability introduced in the process of sample extraction and collection is typically estimated to be an order of magnitude or more greater than analytical and reporting variability within the laboratory, some general conclusions about the variability of the data set as a whole can be drawn. For that purpose, the mean relative percent difference (RPD) between individual field duplicate data pairs with detectable concentrations of the four most commonly detected target analytes, along with other statistical parameters, are summarized in the table below using data expressed as µg/L-vapor:

	STATISTICAL PARAMETERS - Field Duplicates			
	Average RPD <sup>a</sup>	Standard deviation (σ)	Variance (σ <sup>2</sup> )	Relative Error σ÷RD <sup>b</sup>
<b>Carbon tetrachloride</b>	8.2 %	5.9 x 10 <sup>-2</sup>	3.5 x 10 <sup>-3</sup>	0.72
<b>1,1-Dichloroethene</b>	6.3 %	6.5 x 10 <sup>-2</sup>	4.2 x 10 <sup>-3</sup>	1.03
<b>Freon 113</b>	5.0 %	5.7 x 10 <sup>-2</sup>	3.2 x 10 <sup>-3</sup>	1.14
<b>Trichloroethene</b>	14.6 %	1.3 x 10 <sup>-1</sup>	1.6 x 10 <sup>-2</sup>	0.87

$$^a \text{RPD} = \frac{|(\text{Duplicate1} - \text{Duplicate2})| \times 100}{(\text{Duplicate1} + \text{Duplicate2}) \div 2}$$

$$^b \text{RD} = \text{Relative Difference (RD = RPD/100)}; \sigma \text{ and } \sigma^2 \text{ are calculated using RD.}$$

Average RPDs and other statistical parameters compare favorably with the statistical data calculated from previous soil vapor analyses as reported by HP Labs. With average RPDs consistently below 15 percent, there is good general agreement between duplicate pairs and good consistency between sampling events. This suggests that a reproducibly consistent field sampling procedure is being properly implemented. With 72 to 114 percent relative error, variability within the duplicate data set is not considered excessive for this type of field sampling. It is suspected that this variability is probably not introduced by the laboratory's analytical system, but by the field collection technique which varies the amount of vapor purged from a well as a function of sampling depth, and by interactions between the inside surfaces of the sampling apparatus, entrained moisture, and target analytes present in the vapor phase.

## VI. SURROGATE RECOVERIES

An essential requirement of the GC method is that each laboratory calculate in-house performance criteria for evaluating recovery of surrogate compounds by their particular analytical system. In this case, 1,4-difluorobenzene, chlorobenzene, and 4-bromofluorobenzene were employed as surrogates. However, the laboratory did not present any historical performance data with which to establish acceptable in-house surrogate recovery limits. Upper and lower warning and control limit calculations should be completed and included in future data packages. Lacking such data, a range of 75 to 125 percent was applied in accordance with RWQCB guidance. This has been the standard by which previous soil data packages were judged. The current data package satisfied this criterion. Indeed, surrogate recoveries typically fell within a recovery range of 86 to 110 percent.

## VII. PERFORMANCE CRITERIA

The detection limit was reported at 1 µg/L vapor for all 25 target compounds. Data to support and confirm this limit was not provided.

## VIII. SUMMARY OF FINDINGS AND RECOMMENDATIONS

A. The following general comments are offered relative to these data packages:

1. The lab should establish and monitor trends in their own specific control limits for surrogate recoveries. This is a recurring request that has not been addressed by the laboratory.
2. At Foster Wheeler's request, the laboratory had added carbon tetrachloride, but has dropped chloroform from their standard mix for preparing calibration verification and QC check standards. In addition, minor concentrations of trichlorofluoromethane (Freon-11) has been detected at several monitoring points. The analyte mix should include all compounds commonly detected in the vapor samples extracted from this site, including chloroform and Freon-11.
3. In general, there was excellent qualitative agreement in the patterns of groups of compounds (or absence thereof) between field duplicate pairs. When one sample was clean, the other showed no detectable contamination. When target contaminants were detected, identical patterns of compounds were seen in both samples. Strong agreement between patterns indicates a high degree of precision in the identification of specific target analytes by the laboratory and also demonstrates that field sampling procedures, equipment design and materials of construction are not introducing significant bias.

B. The following data qualifications should be made when reporting these results:

No data required qualification as a result of this review.



TABLE 1

**SUMMARY OF SOIL-VAPOR RESULTS**  
**THIRD LONG-TERM SAMPLING EVENT**  
(Concentrations in µg/L-vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl <sub>4</sub>	Freon 113	TCE	1,1-DCE	Chloroform	1,1,1-TCA	Freon 11
25	20	10/4/99	VPSV-749	ND	ND	ND	ND	ND	ND	ND
25	40	10/4/99	VPSV-750	ND	ND	ND	ND	ND	ND	ND
25	60	10/4/99	NS	P	P	P	P	P	P	P
25	85	10/4/99	NS	P	P	P	P	P	P	P
25	100	10/4/99	VPSV-751	ND	ND	ND	ND	ND	ND	ND
25	120	10/4/99	VPSV-752	ND	ND	ND	ND	ND	ND	ND
25	145	10/4/99	VPSV-753	ND	ND	ND	ND	ND	ND	ND
25	145	10/4/99	VPSV-754(DUP)	ND	ND	ND	ND	ND	ND	ND
25	165	10/4/99	NS	P	P	P	P	P	P	P
25	180	10/4/99	VPSV-755	ND	2.2	ND	ND	ND	ND	ND
25	190	10/4/99	VPSV-756	ND	ND	ND	ND	ND	ND	ND
26	20	10/4/99	NS	P	P	P	P	P	P	P
26	35	10/4/99	VPSV-757	10	ND	1.5	ND	ND	ND	ND
26	55	10/4/99	NS	P	P	P	P	P	P	P
26	80	10/4/99	NS	P	P	P	P	P	P	P
26	100	10/4/99	NS	P	P	P	P	P	P	P
26	115	10/4/99	VPSV-758	1.7	ND	ND	ND	ND	ND	ND
26	140	10/4/99	VPSV-759	5.4	ND	1.9	ND	ND	ND	ND
26	140	10/4/99	VPSV-760(DUP)	8.1	ND	1.7	ND	ND	ND	ND
26	160	10/5/99	VPSV-761	5.0	2.2	1.8	ND	ND	ND	ND
26	180	10/5/99	VPSV-762	2.9	3.0	6.5	ND	ND	ND	ND
26	195	10/5/99	NS	P	P	P	P	P	P	P
27	20	10/5/99	VPSV-763	ND	ND	ND	ND	ND	ND	ND
27	35	10/5/99	NS	W	W	W	W	W	W	W
27	60	10/5/99	VPSV-764	ND	2.5	ND	ND	ND	ND	ND
27	85	10/5/99	VPSV-765	ND	ND	ND	ND	ND	ND	ND
27	85	10/5/99	VPSV-766(DUP)	ND	ND	ND	ND	ND	ND	ND
27	100	10/5/99	VPSV-767	5.2	ND	ND	ND	ND	ND	ND
27	120	10/5/99	VPSV-768	1.3	ND	ND	ND	ND	ND	ND

TABLE 1

**SUMMARY OF SOIL-VAPOR RESULTS**  
**THIRD LONG-TERM SAMPLING EVENT**  
(Concentrations in µg/L-vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl <sub>4</sub>	Freon 113	TCE	1,1-DCE	Chloroform	1,1,1-TCA	Freon 11
27	140	10/5/99	VPSV-769	6.2	1.2	ND	ND	ND	ND	ND
27	160	10/5/99	VPSV-770	ND	ND	ND	ND	ND	ND	ND
27	180	10/5/99	VPSV-771	12	2.1	4.0	ND	ND	ND	ND
27	180	10/5/99	VPSV-772(DUP)	12	1.9	4.5	ND	ND	ND	ND
27	205	10/5/99	VPSV-773	4.8	2.2	ND	ND	ND	ND	ND
28	20	10/6/99	VPSV-783	ND	ND	ND	ND	ND	ND	ND
28	20	10/6/99	VPSV-784(DUP)	ND	ND	ND	ND	ND	ND	ND
28	45	10/6/99	NS	P	P	P	P	P	P	P
28	65	10/6/99	NS	P	P	P	P	P	P	P
28	80	10/6/99	VPSV-785	ND	ND	ND	ND	ND	ND	ND
28	105	10/6/99	VPSV-786	ND	ND	ND	ND	ND	ND	ND
28	120	10/6/99	NS	P	P	P	P	P	P	P
28	140	10/6/99	NS	P	P	P	P	P	P	P
28	160	10/6/99	NS	P	P	P	P	P	P	P
32	25	10/9/99	VPSV-812	ND	ND	ND	ND	ND	ND	ND
32	40	10/9/99	VPSV-813	ND	ND	ND	ND	ND	ND	ND
32	40	10/9/99	VPSV-814(DUP)	ND	ND	ND	ND	ND	ND	ND
32	55	10/9/99	VPSV-815	ND	ND	ND	ND	ND	ND	ND
32	70	10/9/99	VPSV-816	ND	3.9	ND	ND	ND	ND	ND
32	90	10/9/99	VPSV-817	ND	ND	ND	ND	ND	ND	ND
32	115	10/9/99	NS	P	P	P	P	P	P	P
32	135	10/9/99	NS	P	P	P	P	P	P	P
32	155	10/9/99	VPSV-818	28	78	ND	ND	ND	ND	ND
32	180	10/9/99	VPSV-819	1.6	ND	ND	ND	ND	ND	ND
32	180	10/9/99	VPSV-820(DUP)	1.7	ND	ND	ND	ND	ND	ND
32	195	10/9/99	VPSV-821	ND	ND	ND	ND	1.5	ND	ND
33	20	10/6/99	VPSV-774	ND	2.3	ND	ND	ND	ND	ND
33	40	10/6/99	VPSV-775	3.7	67	8.9	47	ND	ND	ND
33	60	10/6/99	VPSV-776	6.6	2.4	1.7	4.8	ND	ND	ND

TABLE 1

**SUMMARY OF SOIL-VAPOR RESULTS**  
**THIRD LONG-TERM SAMPLING EVENT**  
(Concentrations in µg/L-vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl <sub>4</sub>	Freon 113	TCE	1,1-DCE	Chloroform	1,1,1-TCA	Freon 11
33	85	10/6/99	VPSV-777	19	4.5	ND	3.3	ND	ND	ND
33	85	10/6/99	VPSV-778(DUP)	22	4.7	ND	3.3	ND	ND	ND
33	105	10/6/99	VPSV-779	38	13	ND	4.4	ND	ND	ND
33	120	10/6/99	VPSV-780	64	17	1.1	4.1	ND	ND	ND
33	140	10/6/99	VPSV-781	8.6	3.3	ND	ND	2.9	ND	ND
33	160	10/6/99	NS	P	P	P	P	P	P	P
33	180	10/6/99	NS	P	P	P	P	P	P	P
33	200	10/6/99	VPSV-782	ND	ND	ND	ND	ND	ND	ND
34	20	10/7/99	VPSV-799	ND	ND	ND	ND	ND	ND	ND
34	35	10/7/99	VPSV-800	ND	ND	ND	ND	ND	ND	ND
34	50	10/5/99	NS	W	W	W	W	W	W	W
34	65	10/8/99	VPSV-801	ND	ND	ND	ND	ND	ND	ND
34	65	10/8/99	VPSV-802(DUP)	ND	ND	ND	ND	ND	ND	ND
34	80	10/8/99	VPSV-803	ND	ND	ND	ND	ND	ND	ND
34	95	10/8/99	VPSV-804	ND	ND	ND	ND	ND	ND	ND
34	108	10/8/99	VPSV-805	8.2	ND	ND	ND	ND	ND	ND
34	118	10/8/99	VPSV-806	52	2.5	ND	1.3	5.1	ND	ND
35	20	10/7/99	VPSV-787	ND	ND	ND	ND	ND	ND	ND
35	35	10/7/99	VPSV-788	ND	ND	ND	ND	ND	ND	ND
35	50	10/7/99	VPSV-789	ND	ND	ND	ND	ND	ND	ND
35	50	10/7/99	VPSV-791(DUP)	ND	ND	ND	ND	ND	ND	ND
35	60	10/7/99	VPSV-790	ND	ND	ND	ND	ND	ND	ND
35	80	10/7/99	VPSV-792	ND	ND	ND	ND	ND	ND	ND
35	95	10/7/99	VPSV-793	1.6	ND	ND	ND	ND	ND	ND
35	110	10/7/99	VPSV-794	ND	ND	ND	ND	ND	ND	ND
35	125	10/7/99	VPSV-795	ND	1.5	ND	ND	ND	ND	ND
35	125	10/7/99	VPSV-796(DUP)	ND	1.5	ND	ND	ND	ND	ND
35	140	10/7/99	VPSV-797	13	19	3.6	ND	ND	ND	ND
35	155	10/7/99	VPSV-798	13	17	9.0	ND	ND	ND	ND

TABLE 1

**SUMMARY OF SOIL-VAPOR RESULTS**  
**THIRD LONG-TERM SAMPLING EVENT**  
(Concentrations in µg/L-vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl <sub>4</sub>	Freon 113	TCE	1,1-DCE	Chloroform	1,1,1-TCA	Freon 11
36	20	10/8/99	NS	P	P	P	P	P	P	P
36	35	10/8/99	VPSV-807	48	ND	27	2.0	2.6	33	ND
36	35	10/8/99	VPSV-808(DUP)	49	ND	20	2.2	2.2	32	ND
36	55	10/8/99	VPSV-809	153	1.3	61	9.2	1.1	98	ND
36	75	10/8/99	VPSV-810	30	3.9	2.2	2.3	12	7.6	1.2
36	92	10/8/99	VPSV-811	20	5.8	1.4	2.6	15	1.3	ND
37	25	10/9/99	VPSV-822	ND	ND	ND	ND	ND	ND	ND
37	40	10/9/99	VPSV-823	2.1	ND	ND	ND	ND	ND	ND
37	60	10/9/99	VPSV-824	ND	ND	ND	ND	ND	ND	ND
37	80	10/9/99	VPSV-825	1.6	ND	ND	ND	ND	ND	ND
37	80	10/9/99	VPSV-826(DUP)	1.9	ND	ND	ND	ND	ND	ND
37	100	10/9/99	VPSV-827	12	1.8	3.1	ND	1.6	ND	ND
37	120	10/9/99	VPSV-828	19	12	4.0	2.6	3.6	ND	1.6
37	140	10/10/99	VPSV-829	3.0	1.8	ND	1.7	ND	ND	ND
37	155	10/10/99	VPSV-830	6.0	1.5	1.6	ND	ND	ND	ND
37	170	10/10/99	VPSV-831	6.5	2.0	2.3	1.9	ND	ND	1.1
37	170	10/10/99	VPSV-832(DUP)	6.4	2.1	1.9	2.4	ND	ND	1.1
37	185	10/10/99	VPSV-833	7.4	2.8	4.4	1.8	ND	ND	ND
38	25	10/10/99	VPSV-834	ND	ND	ND	ND	ND	ND	ND
38	45	10/10/99	VPSV-835	ND	ND	ND	ND	ND	ND	ND
38	65	10/10/99	VPSV-836	ND	ND	ND	ND	ND	ND	ND
38	80	10/10/99	VPSV-837	ND	ND	ND	ND	ND	ND	ND
38	80	10/10/99	VPSV-838(DUP)	ND	ND	ND	ND	ND	ND	ND
38	95	10/10/99	NS	W	W	W	W	W	W	W
38	110	10/10/99	VPSV-839	9.3	5.8	1.7	ND	1.7	ND	1.2
38	125	10/10/99	VPSV-840	3.2	3.6	ND	ND	ND	ND	ND
38	140	10/10/99	VPSV-841	6.6	3.4	ND	ND	1.9	ND	1.6
38	155	10/10/99	VPSV-842	6.7	3.6	1.2	1.8	1.1	ND	1.6

TABLE 1

**SUMMARY OF SOIL-VAPOR RESULTS  
THIRD LONG-TERM SAMPLING EVENT**  
(Concentrations in µg/L-vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl <sub>4</sub>	Freon 113	TCE	1,1-DCE	Chloroform	1,1,1-TCA	Freon 11
38	170	10/10/99	VPSV-843	8.1	4.9	3.9	1.4	ND	ND	1.1
38	170	10/10/99	VPSV-844(DUP)	5.6	3.5	2.9	1.3	ND	ND	1.1
39	20	10/11/99	VPSV-845	ND	ND	ND	ND	ND	ND	ND
39	35	10/11/99	VPSV-846	ND	ND	ND	ND	ND	ND	ND
39	50	10/11/99	VPSV-847	ND	ND	ND	ND	ND	ND	ND
39	70	10/11/99	VPSV-848	ND	ND	ND	ND	ND	ND	ND
39	85	10/11/99	VPSV-849	6.3	48	1.4	ND	ND	ND	ND
39	85	10/11/99	VPSV-850(DUP)	7.7	47	2.5	ND	ND	ND	ND
39	100	10/11/99	VPSV-851	9.0	46	3.3	ND	ND	ND	ND
39	110	10/11/99	VPSV-852	12	55	3.2	ND	ND	ND	ND
39	120	10/11/99	VPSV-853	4.9	16	17	ND	ND	ND	ND
39	130	10/11/99	VPSV-854	2.0	9.0	15	ND	ND	ND	ND

**Notes:**

- bgs - Below ground surface.
- DUP - Duplicate samples.
- ft - feet.
- ND - Not detected.
- NS - Not sampled.
- P - Sampling port plugged.
- W - Sampling port inundated with water.

## **APPENDIX B**

**B-1 RESULTS OF SOIL-VAPOR ANALYSES**

**B-2 CHAIN-OF-CUSTODY FORMS**

**B-3 INITIAL THREE-POINT CALIBRATION DATA**

**B-4 DAILY OPENING, CLOSING, AND CONTINUING  
CALIBRATION VERIFICATION REPORTS**

**APPENDIX B-1**  
**RESULTS OF SOIL-VAPOR ANALYSES**



FOSTER WHEELER PROJECT #1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0117W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

AREA COUNTS

	BLANK	BLANK	VPSV918-20	VPSV918-20	VPSV919-40	VPSV919-40	VPSV920-145	VPSV920-145	VPSV921-180	VPSV921-180
DATE	01/17/00	01/17/00	01/17/00	01/17/00	01/17/00	01/17/00	01/17/00	01/17/00	01/17/00	01/17/00
SAMPLING TIME	7:12	7:12	8:57	8:57	9:21	9:21	10:04	10:04	10:33	10:33
ANALYSIS TIME	7:12	7:12	8:59	8:59	9:23	9:23	10:06	10:06	10:35	10:35
SAMPLING DEPTH (feet)	--	--	20	20	40	40	145	145	180	180
VOLUME WITHDRAWN (cc)	200	200	80	80	160	160	580	580	720	720
VOLUME INJECTED	1	1	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	nd	nd	nd	nd	nd	nd	10.3	177	10.4	178
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd	nd	nd	nd	5.6	134
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES										
1,4 DIFLUORO BENZENE	10.9	224	10.9	252	10.9	236	10.9	229	10.9	250
CHLOROBENZENE	17.8	555	17.8	567	17.8	543	17.8	514	17.8	574
4 BROMOFLUORO BENZENE	21.0	812	21.0	917	21.1	846	21.1	824	21.1	901

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER





FOSTER WHEELER PROJECT # 1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0117W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

SOIL VAPOR DATA IN PPMV

		BLANK	VPSV918-20	VPSV919-40	VPSV920-145	VPSV921-180	VPSV922-190
DATE		01/17/00	01/17/00	01/17/00	01/17/00	01/17/00	01/17/00
SAMPLING TIME		07:12	08:57	09:21	10:04	10:33	10:59
ANALYSIS TIME		07:12	08:59	09:23	10:06	10:35	11:01
SAMPLING DEPTH (feet)		--	20	40	145	180	190
VOLUME WITHDRAWN (cc)		200	80	160	580	720	760
VOLUME INJECTED	DETECTION	1	1	1	1	1	1
DILUTION FACTOR	LIMITS	1	1	1	1	1	1
	(ppmv)						
CARBON TETRACHLORIDE	0.156	nd	nd	nd	0.2	0.2	0.2
CHLOROETHANE/BROMOMETHANE	0.369	nd	nd	nd	nd	nd	nd
CHLOROFORM	0.202	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	0.242	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	0.242	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	0.282	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	0.145	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	0.143	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	0.143	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	0.180	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	0.180	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	0.182	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	0.381	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	0.183	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	0.198	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	0.128	nd	nd	nd	nd	0.2	nd
BENZENE	0.308	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	0.226	nd	nd	nd	nd	nd	nd
TOLUENE	0.261	nd	nd	nd	nd	nd	nd
m&p-XYLENES	0.226	nd	nd	nd	nd	nd	nd
o-XYLENE	0.226	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	0.481	nd	nd	nd	nd	nd	nd
SURROGATES							
1,4 DIFLUORO BENZENE		97%	110%	103%	100%	109%	104%
CHLOROBENZENE		106%	109%	104%	98%	110%	106%
4 BROMOFLUORO BENZENE		95%	107%	99%	96%	106%	101%

ND INDICATES NOT DETECTED AT LISTED DETECTION LIMITS FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES F. PICKER



FOSTER WHEELER PROJECT # 1572.0298

JPL  
OAK GROVE DRIVE  
PASADENA, CA

HP Labs Project #2K0117W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

SOIL VAPOR DATA IN UG/L-VAPOR

	BLANK	VPSV918-20	VPSV919-40	VPSV920-145	VPSV921-180	VPSV922-190
DATE	01/17/00	01/17/00	01/17/00	01/17/00	01/17/00	01/17/00
SAMPLING TIME	07:12	08:57	09:21	10:04	10:33	10:59
ANALYSIS TIME	07:12	08:59	09:23	10:06	10:35	11:01
SAMPLING DEPTH (feet)	--	20	40	145	180	190
VOLUME WITHDRAWN (cc)	200	80	160	580	720	760
VOLUME INJECTED	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1
CARBON TETRACHLORIDE	nd	nd	nd	1.0	1.0	1.2
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	1.5	nd
BENZENE	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd
SURROGATES						
1,4 DIFLUORO BENZENE	97%	110%	103%	100%	109%	104%
CHLOROBENZENE	106%	109%	104%	98%	110%	106%
4 BROMOFLUORO BENZENE	95%	107%	99%	96%	106%	101%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. GUNTER



FOSTER WHEELER PROJECT #1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0117W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

AREA COUNTS

	VPSV922-190	VPSV922-190	VPSV923-190 DUP	VPSV923-190 DUP	VPSV924-35	VPSV924-35	VPSV925-115	VPSV925-115
DATE	01/17/00	01/17/00	01/17/00	01/17/00	01/17/00	01/17/00	01/17/00	01/17/00
SAMPLING TIME	10:59	10:59	11:25	11:25	11:51	11:51	12:19	12:19
ANALYSIS TIME	11:01	11:01	11:27	11:27	11:55	11:55	12:23	12:23
SAMPLING DEPTH (feet)	190	190	190	190	35	35	115	115
VOLUME WITHDRAWN (cc)	760	760	760	760	140	140	460	460
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	10.3	204	10.3	189	nd	nd	10.3	1,203
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	10.9	239	10.9	220	10.9	217	10.9	219
CHLOROBENZENE	17.8	554	17.8	504	17.8	492	17.8	505
4 BROMOFLUORO BENZENE	21.0	866	21.1	795	21.1	787	21.1	799

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER



FOSTER WHEELER PROJECT #1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0117W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

AREA COUNTS

	VPSV926-140	VPSV926-140	VPSV927-160	VPSV927-160	VPSV928-180	VPSV928-180	VPSV929-180 DUP	VPSV929-180 DUP
DATE	01/17/00	01/17/00	01/17/00	01/17/00	01/17/00	01/17/00	01/17/00	01/17/00
SAMPLING TIME	12:48	12:48	13:15	13:15	13:42	13:42	14:09	14:09
ANALYSIS TIME	12:52	12:52	13:18	13:18	13:44	13:44	14:11	14:11
SAMPLING DEPTH (feet)	140	140	160	160	180	180	180	180
VOLUME WITHDRAWN (cc)	560	560	640	640	720	720	720	720
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	10.4	1,982	10.4	1,971	10.4	945	10.4	857
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	9.1	440	9.2	385	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	6.0	10	6.0	12	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	11.7	26	11.7	27	11.7	87	11.7	85
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	5.9	109	5.8	261	5.8	312	5.8	325
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	11.0	220	10.9	236	10.9	242	10.9	235
CHLOROBENZENE	17.9	502	17.9	544	17.9	560	17.9	540
4 BROMOFLUORO BENZENE	21.1	790	21.1	849	21.1	873	21.1	852

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES F. PICKER



FOSTER WHEELER PROJECT # 1572 0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0117W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

SOIL VAPOR DATA IN PPMV

	VPSV923-190 DUP	VPSV924-35	VPSV925-115	VPSV926-140	VPSV927-160	VPSV928-180	VPSV929-180 DUP
DATE	01/17/00	01/17/00	01/17/00	01/17/00	01/17/00	01/17/00	01/17/00
SAMPLING TIME	11:25	11:51	12:19	12:48	13:15	13:42	14:09
ANALYSIS TIME	11:27	11:55	12:23	12:52	13:18	13:44	14:11
SAMPLING DEPTH (feet)	190	35	115	140	160	180	180
VOLUME WITHDRAWN (cc)	760	140	460	560	640	720	720
VOLUME INJECTED	DETECTION	1	1	1	1	1	1
DILUTION FACTOR	LIMITS	1	1	1	1	1	1
	(ppmv)						
CARBON TETRACHLORIDE	0.156	0.2	nd	1.1	1.8	1.8	0.8
CHLOROETHANE/BROMOMETHANE	0.369	nd	nd	nd	nd	nd	nd
CHLOROFORM	0.202	nd	nd	nd	0.3	0.3	nd
1,1-DICHLORO ETHANE	0.242	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	0.242	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	0.247	nd	nd	nd	0.3	0.3	nd
CIS-1,2-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	0.282	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	0.145	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	0.143	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	0.143	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	0.180	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	0.180	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	0.182	nd	nd	nd	0.3	0.3	1.0
VINYL CHLORIDE	0.381	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	0.183	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	0.198	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	0.128	nd	nd	nd	0.2	0.4	0.4
BENZENE	0.308	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	0.226	nd	nd	nd	nd	nd	nd
TOLUENE	0.261	nd	nd	nd	nd	nd	nd
m&p-XYLENES	0.226	nd	nd	nd	nd	nd	nd
o-XYLENE	0.226	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	0.481	nd	nd	nd	nd	nd	nd
SURROGATES							
1,4 DIFLUORO BENZENE	96%	94%	95%	96%	103%	105%	102%
CHLOROBENZENE	97%	94%	97%	96%	104%	107%	103%
4 BROMOFLUORO BENZENE	93%	92%	94%	93%	99%	102%	100%
ND INDICATES NOT DETECTED AT LISTED DETECTION LIMITS FOR EACH ANALYTE							

ND INDICATES NOT DETECTED AT LISTED DETECTION LIMITS FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES F. PICKER



FOSTER WHEELER PROJECT # 1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0117W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

SOIL VAPOR DATA IN UG/L-VAPOR

	VPSV923-190 DUP	VPSV924-35	VPSV925-115	VPSV926-140	VPSV927-160	VPSV928-180	VPSV929-180 DUP
DATE	01/17/00	01/17/00	01/17/00	01/17/00	01/17/00	01/17/00	01/17/00
SAMPLING TIME	11:25	11:51	12:19	12:48	13:15	13:42	14:09
ANALYSIS TIME	11:27	11:55	12:23	12:52	13:18	13:44	14:11
SAMPLING DEPTH (feet)	190	35	115	140	160	180	180
VOLUME WITHDRAWN (cc)	760	140	460	560	640	720	720
VOLUME INJECTED	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1
CARBON TETRACHLORIDE	1.1	nd	6.9	11	11	5.4	4.9
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	1.5	1.3	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	1.1	1.3	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	1.7	1.8	5.7	5.5
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	1.2	2.9	3.5	3.6
BENZENE	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd
SURROGATES							
1,4 DIFLUORO BENZENE	96%	94%	95%	96%	103%	105%	102%
CHLOROBENZENE	97%	94%	97%	96%	104%	107%	103%
4 BROMOFLUORO BENZENE	93%	92%	94%	93%	99%	102%	100%

NO INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER



FOSTER WHEELER PROJECT #1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0118W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

AREA COUNTS

	BLANK	BLANK	VPSV930-20	VPSV930-20	VPSV931-35	VPSV931-35	VPSV932-60	VPSV932-60
DATE	01/18/00	01/18/00	01/18/00	01/18/00	01/18/00	01/18/00	01/18/00	01/18/00
SAMPLING TIME	4:42	4:42	7:48	7:48	8:10	8:10	8:34	8:34
ANALYSIS TIME	4:42	4:42	7:49	7:49	8:13	8:13	8:37	8:37
SAMPLING DEPTH (feet)	--	--	20	20	35	35	60	60
VOLUME WITHDRAWN (cc)	200	200	80	80	140	140	240	240
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd	nd	5.7	304
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	10.8	241	10.9	252	10.7	225	10.8	231
CHLOROBENZENE	17.8	536	17.8	571	17.8	516	17.8	538
4 BROMOFLUORO BENZENE	21.0	875	21.0	915	21.0	821	21.0	845

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER



FOSTER WHEELER PROJECT # 1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0118W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

SOIL VAPOR DATA IN PPMV

		BLANK	VPSV930-20	VPSV931-35	VPSV932-60	VPSV933-85	VPSV934-100	VPSV935-100 DUP	VPSV936-120
DATE		01/18/00	01/18/00	01/18/00	01/18/00	01/18/00	01/18/00	01/18/00	01/18/00
SAMPLING TIME		04:42	07:48	08:10	08:34	08:58	09:22	09:46	10:09
ANALYSIS TIME		04:42	07:49	08:13	08:37	09:01	09:25	09:49	10:13
SAMPLING DEPTH (feet)		--	20	35	60	85	100	100	120
VOLUME WITHDRAWN (cc)		200	80	140	240	340	400	400	480
VOLUME INJECTED	DETECTION	1	1	1	1	1	1	1	1
DILUTION FACTOR	LIMITS	1	1	1	1	1	1	1	1
	(ppmv)								
CARBON TETRACHLORIDE	0.156	nd	nd	nd	nd	0.5	2.0	2.4	0.3
CHLOROETHANE/BROMOMETHANE	0.369	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	0.202	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	0.242	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	0.242	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	0.282	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	0.145	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	0.143	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	0.143	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	0.180	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	0.180	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	0.182	nd	nd	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	0.381	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	0.183	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	0.198	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	0.128	nd	nd	nd	0.4	0.3	0.2	0.2	nd
BENZENE	0.308	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	0.226	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	0.261	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	0.226	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	0.226	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	0.481	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES									
1,4 DIFLUORO BENZENE		105%	110%	98%	100%	98%	97%	94%	102%
CHLOROBENZENE		103%	109%	99%	103%	102%	98%	95%	103%
4 BROMOFLUORO BENZENE		102%	107%	96%	99%	97%	94%	92%	100%

ND INDICATES NOT DETECTED AT LISTED DETECTION LIMITS FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER





FOSTER WHEELER PROJECT # 1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0118W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

SOIL VAPOR DATA IN UG/L-VAPOR

	BLANK	VPSV930-20	VPSV931-35	VPSV932-60	VPSV933-85	VPSV934-100	VPSV935-100 DUP	VPSV936-120
DATE	01/18/00	01/18/00	01/18/00	01/18/00	01/18/00	01/18/00	01/18/00	01/18/00
SAMPLING TIME	04:42	07:48	08:10	08:34	08:58	09:22	09:46	10:09
ANALYSIS TIME	04:42	07:49	08:13	08:37	09:01	09:25	09:49	10:13
SAMPLING DEPTH (feet)	--	20	35	60	85	100	100	120
VOLUME WITHDRAWN (cc)	200	80	140	240	340	400	400	480
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
CARBON TETRACHLORIDE	nd	nd	nd	nd	3.0	13	15	1.6
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	3.4	2.6	1.4	1.7	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	105%	110%	98%	100%	98%	97%	94%	102%
CHLOROBENZENE	103%	109%	99%	103%	102%	98%	95%	103%
4 BROMOFLUORO BENZENE	102%	107%	96%	99%	97%	94%	92%	100%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES F. PICKER



FOSTER WHEELER PROJECT #1572.0298

JPL  
OAK GROVE DRIVE  
PASADENA, CA

HP Labs Project #2K0118W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

AREA COUNTS

	VPSV933-85	VPSV933-85	VPSV934-100	VPSV934-100	PSV935-100 DUP	PSV935-100 DUP	VPSV936-120	VPSV936-120
DATE	01/18/00	01/18/00	01/18/00	01/18/00	01/18/00	01/18/00	01/18/00	01/18/00
SAMPLING TIME	8:58	8:58	9:22	9:22	9:46	9:46	10:09	10:09
ANALYSIS TIME	9:01	9:01	9:25	9:25	9:49	9:49	10:13	10:13
SAMPLING DEPTH (feet)	85	85	100	100	100	100	120	120
VOLUME WITHDRAWN (cc)	340	340	400	400	400	400	480	480
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	10.2	515	10.2	2,267	10.3	2,647	10.3	285
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	5.7	238	6.0	129	6.0	156	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	10.7	226	10.8	222	10.9	216	10.8	235
CHLOROBENZENE	17.8	532	17.8	512	17.8	495	17.8	537
4 BROMOFLUORO BENZENE	21.0	830	21.1	806	21.1	785	21.1	856

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER



FOSTER WHEELER PROJECT # 1572.0298

JPL  
OAK GROVE DRIVE  
PASADENA, CA

HP Labs Project #2K0118W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

SOIL VAPOR DATA IN PPMV

	VPSV937-140	VPSV938-160	VPSV939-180	VPSV940-205	VPSV941-205 DUP	VPSV942-20	VPSV943-80	VPSV944-105
DATE	01/18/00	01/18/00	01/18/00	01/18/00	01/18/00	01/18/00	01/18/00	01/18/00
SAMPLING TIME	10:36	11:00	11:26	11:51	12:13	13:06	13:30	13:56
ANALYSIS TIME	10:37	11:04	11:28	11:53	12:19	13:10	13:34	13:58
SAMPLING DEPTH (feet)	140	160	180	205	205	20	80	105
VOLUME WITHDRAWN (cc)	560	640	720	820	820	80	320	420
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	(ppmv)							
CARBON TETRACHLORIDE	0.156	1.6	0.4	4.3	1.8	1.4	nd	0.2
CHLOROETHANE/BROMOMETHANE	0.369	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	0.202	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	0.242	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	0.242	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	0.282	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	0.145	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	0.143	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	0.143	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	0.180	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	0.180	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	0.182	nd	nd	0.5	0.5	0.4	nd	nd
VINYL CHLORIDE	0.381	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	0.183	nd	nd	nd	0.2	0.2	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	0.198	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	0.128	0.3	nd	0.4	0.7	0.7	nd	nd
BENZENE	0.308	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	0.226	nd	nd	nd	nd	nd	nd	nd
TOLUENE	0.261	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	0.226	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	0.226	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	0.481	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	89%	89%	90%	93%	100%	89%	96%	94%
CHLOROBENZENE	90%	91%	91%	93%	100%	90%	97%	96%
4 BROMOFLUORO BENZENE	87%	87%	87%	91%	97%	88%	94%	93%

ND INDICATES NOT DETECTED AT LISTED DETECTION LIMITS FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER



FOSTER WHEELER PROJECT #1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0118W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

AREA COUNTS

	VPSV941-205 DUP	PSV941-205 DUP	VPSV942-20	VPSV942-20	VPSV943-80	VPSV943-80	VPSV944-105	VPSV944-105
DATE	01/18/00	01/18/00	01/18/00	01/18/00	01/18/00	01/18/00	01/18/00	01/18/00
SAMPLING TIME	12:13	12:13	13:06	13:06	13:30	13:30	13:56	13:56
ANALYSIS TIME	12:19	12:19	13:10	13:10	13:34	13:34	13:58	13:58
SAMPLING DEPTH (feet)	205	205	20	20	80	80	105	105
VOLUME WITHDRAWN (cc)	820	820	80	80	320	320	420	420
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	10.3	1,605	nd	nd	nd	nd	10.3	195
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	11.6	33	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	5.2	331	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	5.8	481	nd	nd	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	10.9	230	10.8	205	10.8	221	10.9	217
CHLOROBENZENE	17.8	524	17.8	469	17.8	507	17.8	499
4 BROMOFLUORO BENZENE	21.0	828	21.0	748	21.0	805	21.0	792

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER



FOSTER WHEELER PROJECT #1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0118W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

AREA COUNTS

	VPSV937-140	VPSV937-140	VPSV938-160	VPSV938-160	VPSV939-180	VPSV939-180	VPSV940-205	VPSV940-205
DATE	01/18/00	01/18/00	01/18/00	01/18/00	01/18/00	01/18/00	01/18/00	01/18/00
SAMPLING TIME	10:36	10:36	11:00	11:00	11:26	11:26	11:51	11:51
ANALYSIS TIME	10:37	10:37	11:04	11:04	11:28	11:28	11:53	11:53
SAMPLING DEPTH (feet)	140	140	160	160	180	180	205	205
VOLUME WITHDRAWN (cc)	560	560	640	640	720	720	820	820
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	10.3	1,786	10.4	438	10.3	4,741	10.3	1,971
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	11.6	39	11.6	44
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	5.2	332
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	5.7	192	nd	nd	5.8	250	5.8	487
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	10.8	204	10.9	205	10.9	206	10.9	213
CHLOROBENZENE	17.8	469	17.8	473	17.8	475	17.8	486
4 BROMOFLUORO BENZENE	21.1	742	21.1	743	21.1	746	21.0	775

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER



FOSTER WHEELER PROJECT # 1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0118W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

SOIL VAPOR DATA IN UG/L-VAPOR

	VPSV937-140	VPSV938-160	VPSV939-180	VPSV940-205	VPSV941-205 DUP	VPSV942-20	VPSV943-80	VPSV944-105
DATE	01/18/00	01/18/00	01/18/00	01/18/00	01/18/00	01/18/00	01/18/00	01/18/00
SAMPLING TIME	10:36	11:00	11:26	11:51	12:13	13:06	13:30	13:56
ANALYSIS TIME	10:37	11:04	11:28	11:53	12:19	13:10	13:34	13:58
SAMPLING DEPTH (feet)	140	160	180	205	205	20	80	105
VOLUME WITHDRAWN (cc)	560	640	720	820	820	80	320	420
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
CARBON TETRACHLORIDE	10	2.5	27	11	9.2	nd	nd	1.1
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	2.6	2.9	2.2	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	1.2	1.2	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	2.1	nd	2.8	5.4	5.3	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	89%	89%	90%	93%	100%	89%	96%	94%
CHLOROBENZENE	90%	91%	91%	93%	100%	90%	97%	96%
4 BROMOFLUORO BENZENE	87%	87%	87%	91%	97%	88%	94%	93%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER



FOSTER WHEELER PROJECT #1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0119W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

AREA COUNTS

	BLANK	BLANK	VPSV945-20	VPSV945-20	VPSV946-40	VPSV946-40	VPSV947-40 DUP	VPSV947-40 DUP
DATE	01/19/00	01/19/00	01/19/00	01/19/00	01/19/00	01/19/00	01/19/00	01/19/00
SAMPLING TIME	5:31	5:31	7:41	7:41	8:01	8:01	8:24	8:24
ANALYSIS TIME	5:31	5:31	7:42	7:42	8:06	8:06	8:30	8:30
SAMPLING DEPTH (feet)	--	--	20	20	40	40	40	40
VOLUME WITHDRAWN (cc)	200	200	80	80	160	160	160	160
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	nd	nd	nd	nd	10.2	1,068	10.3	1,046
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	5.8	335	5.9	346
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	9.7	222	9.8	236
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	11.5	118	11.6	101
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	5.8	381	5.6	7,777	5.7	8,292
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	10.9	215	10.9	231	10.8	219	10.9	217
CHLOROBENZENE	17.8	481	17.8	521	17.8	511	17.8	507
4 BROMOFLUORO BENZENE	21.0	776	21.0	831	21.0	805	21.0	795

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER



FOSTER WHEELER PROJECT #1572.0298

JPL  
OAK GROVE DRIVE  
PASADENA, CA

HP Labs Project #2K0119W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

AREA COUNTS

	VPSV948-60	VPSV948-60	VPSV949-85	VPSV949-85	VPSV950-105	VPSV950-105	VPSV951-120	VPSV951-120
DATE	01/19/00	01/19/00	01/19/00	01/19/00	01/19/00	01/19/00	01/19/00	01/19/00
SAMPLING TIME	8:48	8:48	9:15	9:15	9:39	9:39	10:03	10:03
ANALYSIS TIME	8:55	8:55	9:18	9:18	9:43	9:43	10:06	10:06
SAMPLING DEPTH (feet)	60	60	85	85	105	105	120	120
VOLUME WITHDRAWN (cc)	240	240	340	340	420	420	480	480
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	10.3	2,413	10.2	5,761	10.3	11,984	10.2	17,560
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	5.9	53	5.8	42	5.9	38	5.8	58
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	11.6	32	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	5.8	375	5.7	633	5.7	1,606	5.7	1,551
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	10.9	249	10.8	225	10.9	220	10.8	224
CHLOROBENZENE	17.8	568	17.8	516	17.8	509	17.8	519
4 BROMOFLUORO BENZENE	21.1	903	21.1	816	21.1	799	21.1	818

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER





FOSTER WHEELER PROJECT # 1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0119W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

SOIL VAPOR DATA IN UG/L-VAPOR

	BLANK	VPSV945-20	VPSV946-40	VPSV947-40 DUP	VPSV948-60	VPSV949-85	VPSV950-105	VPSV951-120
DATE	01/19/00	01/19/00	01/19/00	01/19/00	01/19/00	01/19/00	01/19/00	01/19/00
SAMPLING TIME	05:31	07:41	08:01	08:24	08:48	09:15	09:39	10:03
ANALYSIS TIME	05:31	07:42	08:06	08:30	08:55	09:18	09:43	10:06
SAMPLING DEPTH (feet)	--	20	40	40	60	85	105	120
VOLUME WITHDRAWN (cc)	200	80	160	160	240	340	420	480
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
CARBON TETRACHLORIDE	nd	nd	6.1	6.0	14	33	69	101
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	38	39	5.9	4.7	4.3	6.5
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	1.0	1.1	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	7.7	6.6	2.1	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	4.2	86	92	4.1	7.0	18	17
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	93%	100%	95%	94%	108%	98%	96%	97%
CHLOROBENZENE	92%	100%	98%	97%	109%	99%	98%	99%
4 BROMOFLUORO BENZENE	91%	97%	94%	93%	106%	96%	94%	96%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. DICKER



FOSTER WHEELER PROJECT # 1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0119W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

SOIL VAPOR DATA IN PPMV

		BLANK	VPSV945-20	VPSV946-40	VPSV947-40 DUP	VPSV948-60	VPSV949-85	VPSV950-105	VPSV951-120
DATE		01/19/00	01/19/00	01/19/00	01/19/00	01/19/00	01/19/00	01/19/00	01/19/00
SAMPLING TIME		05:31	07:41	08:01	08:24	08:48	09:15	09:39	10:03
ANALYSIS TIME		05:31	07:42	08:06	08:30	08:55	09:18	09:43	10:06
SAMPLING DEPTH (feet)		--	20	40	40	60	85	105	120
VOLUME WITHDRAWN (cc)		200	80	160	160	240	340	420	480
VOLUME INJECTED									
DILUTION FACTOR	DETECTION LIMITS	1	1	1	1	1	1	1	1
	(ppmv)	1	1	1	1	1	1	1	1
CARBON TETRACHLORIDE	0.156	nd	nd	1.0	0.9	2.2	5.2	11	16
CHLOROETHANE/BROMOMETHANE	0.369	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	0.202	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	0.242	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	0.242	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	0.247	nd	nd	9.3	10	1.5	1.2	1.1	1.6
CIS-1,2-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	0.282	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	0.145	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	0.143	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	0.143	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	0.180	nd	nd	0.2	0.2	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	0.180	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	0.182	nd	nd	1.4	1.2	0.4	nd	nd	nd
VINYL CHLORIDE	0.381	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	0.183	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	0.198	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	0.128	nd	0.5	11	12	0.5	0.9	2.3	2.2
BENZENE	0.308	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	0.226	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	0.261	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	0.226	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	0.226	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	0.481	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES									
1,4 DIFLUORO BENZENE		93%	100%	95%	94%	108%	98%	96%	97%
CHLOROBENZENE		92%	100%	98%	97%	109%	99%	98%	93%
4 BROMOFLUORO BENZENE		91%	97%	94%	93%	106%	96%	94%	96%

ND INDICATES NOT DETECTED AT LISTED DETECTION LIMITS FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER



FOSTER WHEELER PROJECT #1572.0298

JPL  
OAK GROVE DRIVE  
PASADENA, CA

HP Labs Project #2K0119W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR  
AREA COUNTS

	VPSV952-140	VPSV952-140	PSV953-140 DUP	PSV953-140 DUP	VPSV954-200	VPSV954-200	VPSV955-35	VPSV955-35
DATE	01/19/00	01/19/00	01/19/00	01/19/00	01/19/00	01/19/00	01/19/00	01/19/00
SAMPLING TIME	10:27	10:27	10:50	10:50	11:17	11:17	11:42	11:42
ANALYSIS TIME	10:31	10:31	10:55	10:55	11:22	11:22	11:47	11:47
SAMPLING DEPTH (feet)	140	140	140	140	200	200	35	35
VOLUME WITHDRAWN (cc)	560	560	560	560	800	800	140	140
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	10.3	3,324	10.3	2,946	10.4	308	10.3	15,537
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	9.0	1,680	9.1	1,629	nd	nd	9.1	838
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	5.9	13	5.9	12	nd	nd	5.9	29
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	9.8	11,899
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd	11.6	350
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	5.7	604	5.8	590	nd	nd	5.8	110
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	10.9	217	10.9	220	10.9	221	10.9	222
CHLOROBENZENE	17.8	505	17.8	509	17.8	511	17.8	514
4 BROMOFLUORO BENZENE	21.1	788	21.1	798	21.1	794	21.1	803

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER



FOSTER WHEELER PROJECT #1572.0298

JPL  
OAK GROVE DRIVE  
PASADENA, CA

HP Labs Project #2K0119W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

AREA COUNTS

	VPSV956-55	VPSV956-55	VPSV957-75	VPSV957-75	VPSV958-92	VPSV958-92	VPSV959-92 DUP	VPSV959-92 DUP
DATE	01/19/00	01/19/00	01/19/00	01/19/00	01/19/00	01/19/00	01/19/00	01/19/00
SAMPLING TIME	12:07	12:07	12:58	12:58	13:24	13:24	13:47	13:47
ANALYSIS TIME	12:12	12:12	13:03	13:03	13:27	13:27	13:52	13:52
SAMPLING DEPTH (feet)	55	55	75	75	92	92	92	92
VOLUME WITHDRAWN (cc)	220	220	300	300	370	370	370	370
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	10.3	31,020	10.3	11,449	10.3	4,181	10.3	3,989
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	9.1	694	9.1	3,437	9.1	4,332	9.1	4,695
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	5.9	62	5.9	34	5.9	21	5.9	24
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	9.8	23,138	9.8	5,735	9.8	435	9.8	373
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	11.6	677	11.6	77	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	5.2	355	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	5.8	207	5.8	419	5.8	733	5.7	739
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	10.9	219	10.9	220	10.9	237	10.9	216
CHLOROBENZENE	17.8	506	17.8	509	17.8	547	17.8	496
4 BROMOFLUORO BENZENE	21.1	792	21.1	796	21.1	861	21.1	784

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER



FOSTER WHEELER PROJECT # 1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0119W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

SOIL VAPOR DATA IN UG/L-VAPOR

	VPSV952-140	VPSV953-140 DUP	VPSV954-200	VPSV955-35	VPSV956-55	VPSV957-75	VPSV958-92	VPSV959-92 DUP
DATE	01/19/00	01/19/00	01/19/00	01/19/00	01/19/00	01/19/00	01/19/00	01/19/00
SAMPLING TIME	10:27	10:50	11:17	11:42	12:07	12:58	13:24	13:47
ANALYSIS TIME	10:31	10:55	11:22	11:47	12:12	13:03	13:27	13:52
SAMPLING DEPTH (feet)	140	140	200	35	55	75	92	92
VOLUME WITHDRAWN (cc)	560	560	800	140	220	300	370	370
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
CARBON TETRACHLORIDE	19	17	1.8	89	178	66	24	23
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	5.6	5.4	nd	2.8	2.3	11	14	16
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	1.5	1.3	nd	3.3	7.0	3.8	2.4	2.6
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	55	106	26	2.0	1.7
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	23	44	5.0	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	1.3	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	6.7	6.5	nd	1.2	2.3	4.6	8.1	8.2
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	94%	96%	96%	97%	95%	96%	103%	94%
CHLOROBENZENE	97%	98%	98%	98%	97%	98%	105%	95%
4 BROMOFLUORO BENZENE	92%	93%	93%	94%	93%	93%	101%	92%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES F. PICKER



FOSTER WHEELER PROJECT # 1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0119W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

SOIL VAPOR DATA IN PPMV

	VPSV952-140	VPSV953-140 DUP	VPSV954-200	VPSV955-35	VPSV956-55	VPSV957-75	VPSV958-92	VPSV959-92 DUP
DATE	01/19/00	01/19/00	01/19/00	01/19/00	01/19/00	01/19/00	01/19/00	01/19/00
SAMPLING TIME	10:27	10:50	11:17	11:42	12:07	12:58	13:24	13:47
ANALYSIS TIME	10:31	10:55	11:22	11:47	12:12	13:03	13:27	13:52
SAMPLING DEPTH (feet)	140	140	200	35	55	75	92	92
VOLUME WITHDRAWN (cc)	560	560	800	140	220	300	370	370
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	(ppmv)							
CARBON TETRACHLORIDE	0.156	3.0	2.6	0.3	14	28	10	3.6
CHLOROETHANE/BROMOMETHANE	0.369	nd	nd	nd	nd	nd	3.8	nd
CHLOROFORM	0.202	1.1	1.1	nd	0.6	0.5	2.3	3.1
1,1-DICHLORO ETHANE	0.242	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	0.242	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	0.247	0.4	0.3	nd	0.8	1.7	0.9	0.7
CIS-1,2-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	0.282	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	0.145	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	0.143	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	0.143	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	0.180	nd	nd	nd	10	19	4.7	0.4
1,1,2-TRICHLORO ETHANE	0.180	nd	nd	nd	nd	nd	nd	0.3
TRICHLORO ETHENE	0.182	nd	nd	nd	4.2	8.1	0.9	nd
VINYL CHLORIDE	0.381	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	0.183	nd	nd	nd	nd	nd	0.2	nd
DICHLORODIFLUOROMETHANE (FR12)	0.198	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	0.128	0.9	0.8	nd	0.2	0.3	0.6	1.0
BENZENE	0.308	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	0.226	nd	nd	nd	nd	nd	nd	nd
TOLUENE	0.261	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	0.226	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	0.226	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	0.481	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	94%	96%	96%	97%	95%	96%	103%	94%
CHLOROBENZENE	97%	98%	98%	98%	97%	98%	105%	95%
4 BROMOFLUORO BENZENE	92%	93%	93%	94%	93%	93%	101%	92%

ND INDICATES NOT DETECTED AT LISTED DETECTION LIMITS FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER



FOSTER WHEELER PROJECT #1572.0298

JPL  
OAK GROVE DRIVE  
PASADENA, CA

HP Labs Project #2K0120W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

AREA COUNTS

	BLANK	BLANK	VPSV960-20	VPSV960-20	VPSV961-35	VPSV961-35	VPSV962-60	VPSV962-60
DATE	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00
SAMPLING TIME	4:43	4:43	7:13	7:13	7:36	7:36	8:01	8:01
ANALYSIS TIME	4:43	4:43	7:16	7:16	7:39	7:39	8:03	8:03
SAMPLING DEPTH (feet)	--	--	20	20	35	35	60	60
VOLUME WITHDRAWN (cc)	200	200	80	80	140	140	240	240
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	10.7	247	10.9	237	10.7	226	10.8	229
CHLORO BENZENE	17.6	557	17.8	534	17.7	524	17.7	528
4 BROMOFLUORO BENZENE	20.8	899	21.0	856	21.0	831	21.0	838

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER



FOSTER WHEELER PROJECT # 1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0120W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

SOIL VAPOR DATA IN UG/L-VAPOR

	BLANK	VPSV960-20	VPSV961-35	VPSV962-60	VPSV963-80	VPSV964-95	VPSV965-95 DUP
DATE	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00
SAMPLING TIME	04:43	07:13	07:36	08:01	08:22	08:46	09:09
ANALYSIS TIME	04:43	07:16	07:39	08:03	08:27	08:50	09:14
SAMPLING DEPTH (feet)	--	20	35	60	80	95	95
VOLUME WITHDRAWN (cc)	200	80	140	240	320	380	380
VOLUME INJECTED	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1
CARBON TETRACHLORIDE	nd	nd	nd	nd	nd	1.3	1.5
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd
SURROGATES							
1,4 DIFLUORO BENZENE	107%	103%	98%	100%	93%	108%	89%
CHLOROBENZENE	107%	102%	100%	101%	96%	111%	91%
4 BROMOFLUORO BENZENE	105%	100%	97%	98%	92%	107%	88%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES F. PICKER





FOSTER WHEELER PROJECT # 1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0120W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

SOIL VAPOR DATA IN PPMV

		BLANK	VPSV960-20	VPSV961-35	VPSV962-60	VPSV963-80	VPSV964-95	VPSV965-95 DUP
DATE		01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00
SAMPLING TIME		04:43	07:13	07:36	08:01	08:22	08:46	09:09
ANALYSIS TIME		04:43	07:16	07:39	08:03	08:27	08:50	09:14
SAMPLING DEPTH (feet)		--	20	35	60	80	95	95
VOLUME WITHDRAWN (cc)		200	80	140	240	320	380	380
VOLUME INJECTED	DETECTION	1	1	1	1	1	1	1
DILUTION FACTOR	LIMITS	1	1	1	1	1	1	1
	(ppmv)							
CARBON TETRACHLORIDE	0.156	nd	nd	nd	nd	nd	0.2	0.2
CHLOROETHANE/BROMOMETHANE	0.369	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	0.202	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	0.242	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	0.242	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	0.282	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	0.145	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	0.143	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	0.143	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	0.180	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	0.180	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	0.182	nd	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	0.381	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	0.183	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	0.198	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	0.128	nd	nd	nd	nd	nd	nd	nd
BENZENE	0.308	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	0.226	nd	nd	nd	nd	nd	nd	nd
TOLUENE	0.261	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	0.226	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	0.226	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	0.481	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE		107%	103%	98%	100%	93%	108%	89%
CHLOROBENZENE		107%	102%	100%	101%	96%	111%	91%
4 BROMOFLUORO BENZENE		105%	100%	97%	98%	92%	107%	88%

ND INDICATES NOT DETECTED AT LISTED DETECTION LIMITS FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES F. PICKER



FOSTER WHEELER PROJECT #1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0120W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

AREA COUNTS

	VPSV963-80	VPSV963-80	VPSV964-95	VPSV964-95	VPSV965-95 DUP	VPSV965-95 DUP	VPSV966-110	VPSV966-110
DATE	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00
SAMPLING TIME	8:22	8:22	8:46	8:46	9:09	9:09	9:36	9:36
ANALYSIS TIME	8:27	8:27	8:50	8:50	9:14	9:14	9:38	9:38
SAMPLING DEPTH (feet)	80	80	95	95	95	95	110	110
VOLUME WITHDRAWN (cc)	320	320	380	380	380	380	440	440
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	nd	nd	10.1	231	10.2	263	nd	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	10.7	215	10.7	248	10.8	205	10.8	210
CHLOROBENZENE	17.7	501	17.7	581	17.8	473	17.8	481
4 BROMOFLUORO BENZENE	21.0	789	21.0	912	21.0	752	21.0	764

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER



FOSTER WHEELER PROJECT #1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0120W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

AREA COUNTS

	VPSV967-125	VPSV967-125	VPSV968-140	VPSV968-140	VPSV969-20	VPSV969-20	VPSV970-35	VPSV970-35
DATE	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00
SAMPLING TIME	9:57	9:57	10:22	10:22	10:46	10:46	11:10	11:10
ANALYSIS TIME	10:02	10:02	10:28	10:28	10:52	10:52	11:15	11:15
SAMPLING DEPTH (feet)	125	125	140	140	20	20	35	35
VOLUME WITHDRAWN (cc)	500	500	560	560	80	80	140	140
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	nd	nd	10.3	1,470	nd	nd	10.2	808
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	11.6	37	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	5.7	127	5.8	1,342	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES	nd	nd	nd	nd	nd	nd	nd	nd
1,4 DIFLUORO BENZENE	10.8	237	10.9	240	10.8	260	10.8	260
CHLOROBENZENE	17.8	543	17.8	556	17.8	605	17.8	533
4 BROMOFLUORO BENZENE	21.0	862	21.0	873	21.0	949	21.0	844

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER



FOSTER WHEELER PROJECT # 1572.0298

JPL  
OAK GROVE DRIVE  
PASADENA, CA

HP Labs Project #2K0120W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR  
SOIL VAPOR DATA IN PPMV

		VPSV966-110	VPSV967-125	VPSV968-140	VPSV969-20	VPSV970-35	VPSV971-35 DUP
DATE		01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00
SAMPLING TIME		09:36	09:57	10:22	10:46	11:10	11:33
ANALYSIS TIME		09:38	10:02	10:28	10:52	11:15	11:39
SAMPLING DEPTH (feet)		110	125	140	20	35	35
VOLUME WITHDRAWN (cc)		440	500	560	80	140	140
VOLUME INJECTED							
DILUTION FACTOR	DETECTION LIMITS	1	1	1	1	1	1
	(ppmv)						
CARBON TETRACHLORIDE	0.156	nd	nd	1.3	nd	0.7	0.7
CHLOROETHANE/BROMOMETHANE	0.369	nd	nd	nd	nd	nd	nd
CHLOROFORM	0.202	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	0.242	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	0.242	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	0.282	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	0.145	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	0.143	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	0.143	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	0.180	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	0.180	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	0.182	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	0.381	nd	nd	0.4	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	0.183	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	0.198	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	0.128	nd	0.2	1.9	nd	nd	nd
BENZENE	0.308	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	0.226	nd	nd	nd	nd	nd	nd
TOLUENE	0.261	nd	nd	nd	nd	nd	nd
m&p-XYLENES	0.226	nd	nd	nd	nd	nd	nd
o-XYLENE	0.226	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	0.481	nd	nd	nd	nd	nd	nd
SURROGATES							
1,4 DIFLUORO BENZENE		91%	103%	104%	113%	113%	106%
CHLOROBENZENE		92%	104%	107%	116%	102%	108%
4 BROMOFLUORO BENZENE		89%	101%	102%	111%	99%	105%

ND INDICATES NOT DETECTED AT LISTED DETECTION LIMITS FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER



FOSTER WHEELER PROJECT # 1572.0298

JPL  
OAK GROVE DRIVE  
PASADENA, CA

HP Labs Project #2K0120W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

SOIL VAPOR DATA IN UG/L-VAPOR

	VPSV966-110	VPSV967-125	VPSV968-140	VPSV969-20	VPSV970-35	VPSV971-35 DUP
DATE	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00
SAMPLING TIME	09:36	09:57	10:22	10:46	11:10	11:33
ANALYSIS TIME	09:38	10:02	10:28	10:52	11:15	11:39
SAMPLING DEPTH (feet)	110	125	140	20	35	35
VOLUME WITHDRAWN (cc)	440	500	560	80	140	140
VOLUME INJECTED	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1
CARBON TETRACHLORIDE	nd	nd	8.5	nd	4.7	4.5
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	2.4	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	1.4	15	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd
SURROGATES						
1,4 DIFLUORO BENZENE	91%	103%	104%	113%	113%	106%
CHLOROBENZENE	92%	104%	107%	116%	102%	108%
4 BROMOFLUORO BENZENE	89%	101%	102%	111%	99%	105%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES F. PICKER



FOSTER WHEELER PROJECT #1572 0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0120W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

AREA COUNTS

	VPSV971-35 DUP	VPSV971-35 DUP	VPSV972-65	VPSV972-65	VPSV973-80	VPSV973-80	VPSV974-95	VPSV974-95
DATE	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00
SAMPLING TIME	11:33	11:33	12:23	12:23	12:49	12:49	13:10	13:10
ANALYSIS TIME	11:39	11:39	12:27	12:27	12:51	12:51	13:17	13:17
SAMPLING DEPTH (feet)	35	35	65	65	80	80	95	95
VOLUME WITHDRAWN (cc)	140	140	260	260	320	320	380	380
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	10.1	786	nd	nd	nd	nd	nd	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	10.7	244	10.8	275	10.8	215	10.8	227
CHLOROBENZENE	17.7	563	17.8	569	17.8	499	17.8	526
4 BROMOFLUORO BENZENE	21.0	893	21.0	1032	21.0	784	21.0	824

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JENNIFER BROWN



FOSTER WHEELER PROJECT #1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0120W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

AREA COUNTS

	VPSV975-108	VPSV975-108	VPSV976-118	VPSV976-118	VPSV977-118 DUP	VPSV977-118 DUP
DATE	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00
SAMPLING TIME	13:37	13:37	14:01	14:01	14:24	14:24
ANALYSIS TIME	13:41	13:41	14:05	14:05	14:29	14:29
SAMPLING DEPTH (feet)	108	108	118	118	118	118
VOLUME WITHDRAWN (cc)	435	435	475	475	475	475
VOLUME INJECTED	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	10.1	2,447	10.2	9,185	10.3	8,359
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	9.0	1,198	9.1	986
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	5.8	13	5.9	13
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	5.7	402	5.8	382
BENZENE	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd
SURROGATES	nd	nd	nd	nd	nd	nd
1,4 DIFLUORO BENZENE	10.7	229	10.8	210	10.9	207
CHLOROBENZENE	17.7	532	17.8	487	17.8	485
4 BROMOFLUORO BENZENE	21.0	840	21.0	763	21.0	759

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. BAKER



FOSTER WHEELER PROJECT # 1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0120W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

SOIL VAPOR DATA IN PPMV

		VPSV972-65	VPSV973-80	VPSV974-95	VPSV975-108	VPSV976-118	VPSV977-118 DUP
DATE		01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00
SAMPLING TIME		12:23	12:49	13:10	13:37	14:01	14:24
ANALYSIS TIME		12:27	12:51	13:17	13:41	14:05	14:29
SAMPLING DEPTH (feet)		65	80	95	108	118	118
VOLUME WITHDRAWN (cc)		260	320	380	435	475	475
VOLUME INJECTED	DETECTION	1	1	1	1	1	1
DILUTION FACTOR	LIMITS	1	1	1	1	1	1
	(ppmv)						
CARBON TETRACHLORIDE	0.156	nd	nd	nd	2.2	8.2	7.5
CHLOROETHANE/BROMOMETHANE	0.369	nd	nd	nd	nd	nd	nd
CHLOROFORM	0.202	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	0.242	nd	nd	nd	nd	0.8	0.7
1,2-DICHLORO ETHANE	0.242	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	0.247	nd	nd	nd	nd	0.4	0.4
TRANS-1,2-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	0.282	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	0.145	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	0.143	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	0.143	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	0.180	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	0.180	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	0.182	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	0.381	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	0.183	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	0.198	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	0.128	nd	nd	nd	nd	nd	nd
BENZENE	0.308	nd	nd	nd	nd	0.6	0.5
ETHYLBENZENE	0.226	nd	nd	nd	nd	nd	nd
TOLUENE	0.261	nd	nd	nd	nd	nd	nd
m&p-XYLENES	0.226	nd	nd	nd	nd	nd	nd
o-XYLENE	0.226	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	0.481	nd	nd	nd	nd	nd	nd
SURROGATES							
1,4 DIFLUORO BENZENE		120%	93%	99%	100%	91%	90%
CHLOROBENZENE		109%	96%	101%	102%	93%	93%
4 BROMOFLUORO BENZENE		121%	92%	96%	98%	89%	89%

ND INDICATES NOT DETECTED AT LISTED DETECTION LIMITS FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. BAKER





FOSTER WHEELER PROJECT # 1572.0298

JPL  
OAK GROVE DRIVE  
PASADENA, CA

HP Labs Project #2K0120W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

SOIL VAPOR DATA IN UG/L-VAPOR

	VPSV972-65	VPSV973-80	VPSV974-95	VPSV975-108	VPSV976-118	VPSV977-118 DUP
DATE	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00
SAMPLING TIME	12:23	12:49	13:10	13:37	14:01	14:24
ANALYSIS TIME	12:27	12:51	13:17	13:41	14:05	14:29
SAMPLING DEPTH (feet)	65	80	95	108	118	118
VOLUME WITHDRAWN (cc)	260	320	380	435	475	475
VOLUME INJECTED	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1
CARBON TETRACHLORIDE	nd	nd	nd	14	53	48
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	4.0	3.3
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	1.5	1.5
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	4.4	4.2
ETHYLBENZENE	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd
SURROGATES						
1,4 DIFLUORO BENZENE	120%	93%	99%	100%	91%	90%
CHLOROBENZENE	109%	96%	101%	102%	93%	93%
4 BROMOFLUORO BENZENE	121%	92%	96%	98%	89%	89%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER



FOSTER WHEELER PROJECT #1572.0298

JPL  
OAK GROVE DRIVE  
PASADENA, CA

HP Labs Project #2K0121W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

AREA COUNTS

	BLANK	BLANK	VPSV978-25	VPSV978-25	VPSV979-40	VPSV979-40	VPSV980-60	VPSV980-60
DATE	01/21/00	01/21/00	01/21/00	01/21/00	01/21/00	01/21/00	01/21/00	01/21/00
SAMPLING TIME	4:50	4:50	7:38	7:38	7:59	7:59	8:23	8:23
ANALYSIS TIME	4:50	4:50	7:39	7:39	8:03	8:03	8:29	8:29
SAMPLING DEPTH (feet)	--	--	25	25	40	40	60	60
VOLUME WITHDRAWN (cc)	200	200	100	100	160	160	240	240
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	nd	nd	nd	nd	10.2	485	nd	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	5.6	97	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	10.8	215	10.9	206	10.7	230	10.8	226
CHLOROBENZENE	17.7	494	17.8	468	17.7	527	17.7	517
4 BROMOFLUORO BENZENE	21.0	782	21.0	742	21.0	842	21.0	823

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER



FOSTER WHEELER PROJECT #1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0121W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

AREA COUNTS

	VPSV981-80	VPSV981-80	VPSV982-100	VPSV982-100	PSV983-100 DUP	PSV983-100 DUP	VPSV984-25	VPSV984-25
DATE	01/21/00	01/21/00	01/21/00	01/21/00	01/21/00	01/21/00	01/21/00	01/21/00
SAMPLING TIME	8:49	8:49	10:31	10:31	10:53	10:53	11:31	11:31
ANALYSIS TIME	8:53	8:53	10:32	10:32	11:00	11:00	11:32	11:32
SAMPLING DEPTH (feet)	80	80	100	100	100	100	25	25
VOLUME WITHDRAWN (cc)	320	320	400	400	400	400	100	100
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	10.3	336	10.3	2683	10.3	2270	nd	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	9.1	516	9.1	458	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	5.9	10	5.9	12	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	11.6	52	11.6	39	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	5.8	273	5.8	277	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	10.8	205	10.9	223	10.9	220	10.9	208
CHLOROBENZENE	17.8	477	17.8	501	17.8	504	17.8	475
4 BROMOFLUORO BENZENE	21.0	749	21.0	803	21.0	792	21.0	754

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES R. GLOVER



FOSTER WHEELER PROJECT # 1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0121W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

SOIL VAPOR DATA IN PPMV

		BLANK	VPSV978-25	VPSV979-40	VPSV980-60	VPSV981-80	VPSV982-100	VPSV983-100 DUP	VPSV984-25
DATE		01/21/00	01/21/00	01/21/00	01/21/00	01/21/00	01/21/00	01/21/00	01/21/00
SAMPLING TIME		04:50	07:38	07:59	08:23	08:49	10:31	10:53	11:31
ANALYSIS TIME		04:50	07:39	08:03	08:29	08:53	10:32	11:00	11:32
SAMPLING DEPTH (feet)		--	25	40	60	80	100	100	25
VOLUME WITHDRAWN (cc)		200	100	160	240	320	400	400	100
VOLUME INJECTED	DETECTION	1	1	1	1	1	1	1	1
DILUTION FACTOR	LIMITS	1	1	1	1	1	1	1	1
	(ppmv)								
CARBON TETRACHLORIDE	0.156	nd	nd	0.4	nd	0.3	2.4	2.0	nd
CHLOROETHANE/BROMOMETHANE	0.369	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	0.202	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	0.242	nd	nd	nd	nd	nd	0.3	0.3	nd
1,2-DICHLORO ETHANE	0.242	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd	0.3	0.3	nd
TRANS-1,2-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	0.282	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	0.145	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	0.143	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	0.143	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	0.180	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	0.180	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	0.182	nd	nd	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	0.381	nd	nd	nd	nd	nd	0.6	0.5	nd
TRICHLOROFLUOROMETHANE (FR11)	0.183	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	0.198	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	0.128	nd	nd	0.1	nd	nd	0.4	0.4	nd
BENZENE	0.308	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	0.226	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	0.261	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	0.226	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	0.226	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	0.481	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES									
1,4 DIFLUORO BENZENE		93%	90%	100%	98%	89%	97%	96%	90%
CHLOROBENZENE		95%	90%	101%	99%	91%	96%	97%	91%
4 BROMOFLUORO BENZENE		92%	87%	99%	96%	88%	94%	93%	88%

ND INDICATES NOT DETECTED AT LISTED DETECTION LIMITS FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER



FOSTER WHEELER PROJECT # 1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0121W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

SOIL VAPOR DATA IN UG/L-VAPOR

	BLANK	VPSV978-25	VPSV979-40	VPSV980-60	VPSV981-80	VPSV982-100	VPSV983-100 DUP	VPSV984-25
DATE	01/21/00	01/21/00	01/21/00	01/21/00	01/21/00	01/21/00	01/21/00	01/21/00
SAMPLING TIME	04:50	07:38	07:59	08:23	08:49	10:31	10:53	11:31
ANALYSIS TIME	04:50	07:39	08:03	08:29	08:53	10:32	11:00	11:32
SAMPLING DEPTH (feet)	--	25	40	60	80	100	100	25
VOLUME WITHDRAWN (cc)	200	100	160	240	320	400	400	100
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
CARBON TETRACHLORIDE	nd	nd	2.8	nd	1.9	15	13	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	1.7	1.5	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	1.2	1.3	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	3.4	2.6	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	1.1	nd	nd	3.0	3.1	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	93%	90%	100%	98%	89%	97%	96%	90%
CHLOROBENZENE	95%	90%	101%	99%	91%	96%	97%	91%
4 BROMOFLUORO BENZENE	92%	87%	99%	96%	88%	94%	93%	88%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER



FOSTER WHEELER PROJECT #1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0121W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

AREA COUNTS

	VPSV985-40	VPSV985-40	VPSV986-55	VPSV986-55	VPSV987-70	VPSV987-70	VPSV988-90	VPSV988-90
DATE	01/21/00	01/21/00	01/21/00	01/21/00	01/21/00	01/21/00	01/21/00	01/21/00
SAMPLING TIME	11:52	11:52	12:15	12:15	12:38	12:38	13:03	13:03
ANALYSIS TIME	11:55	11:55	12:19	12:19	12:43	12:43	13:07	13:07
SAMPLING DEPTH (feet)	40	40	55	55	70	70	90	90
VOLUME WITHDRAWN (cc)	160	160	220	220	280	280	360	360
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	5.7	240	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	10.8	231	10.8	227	10.8	234	10.8	225
CHLOROBENZENE	17.8	534	17.7	526	17.8	544	17.8	522
4 BROMOFLUORO BENZENE	21.0	843	21.0	826	21.0	849	21.0	819

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER



FOSTER WHEELER PROJECT # 1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0121W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

SOIL VAPOR DATA IN PPMV

		VPSV985-40	VPSV986-55	VPSV987-70	VPSV988-90	VPSV989-90 DUP	VPSV990-155	VPSV991-180	VPSV992-195
DATE		01/21/00	01/21/00	01/21/00	01/21/00	01/21/00	01/21/00	01/21/00	01/21/00
SAMPLING TIME		11:52	12:15	12:38	13:03	13:26	14:36	15:01	15:23
ANALYSIS TIME		11:55	12:19	12:43	13:07	13:30	14:37	15:02	15:27
SAMPLING DEPTH (feet)		40	55	70	90	90	155	180	195
VOLUME WITHDRAWN (cc)		160	220	280	360	360	620	720	780
VOLUME INJECTED	DETECTION	1	1	1	1	1	1	1	1
DILUTION FACTOR	LIMITS	1	1	1	1	1	1	1	1
	(ppmv)								
CARBON TETRACHLORIDE	0.156	nd	nd	nd	nd	nd	3.5	0.3	nd
CHLOROETHANE/BROMOMETHANE	0.369	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	0.202	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	0.242	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	0.242	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	0.282	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	0.145	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	0.143	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	0.143	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	0.180	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	0.180	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	0.182	nd	nd	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	0.381	nd	nd	nd	nd	nd	nd	0.2	nd
TRICHLOROFLUOROMETHANE (FR11)	0.183	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	0.198	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	0.128	nd	nd	0.3	nd	nd	6.6	nd	nd
BENZENE	0.308	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	0.226	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	0.261	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	0.226	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	0.226	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	0.481	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES									
1,4 DIFLUORO BENZENE		100%	99%	102%	98%	103%	97%	99%	103%
CHLORO BENZENE		102%	101%	104%	100%	106%	97%	100%	104%
4 BROMOFLUORO BENZENE		99%	97%	99%	96%	102%	95%	96%	100%

ND INDICATES NOT DETECTED AT LISTED DETECTION LIMITS FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES F. PICKER



FOSTER WHEELER PROJECT # 1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0121W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

SOIL VAPOR DATA IN UG/L-VAPOR

	VPSV985-40	VPSV986-55	VPSV987-70	VPSV988-90	VPSV989-90 DUP	VPSV990-155	VPSV991-180	VPSV992-195
DATE	01/21/00	01/21/00	01/21/00	01/21/00	01/21/00	01/21/00	01/21/00	01/21/00
SAMPLING TIME	11:52	12:15	12:38	13:03	13:26	14:36	15:01	15:23
ANALYSIS TIME	11:55	12:19	12:43	13:07	13:30	14:37	15:02	15:27
SAMPLING DEPTH (feet)	40	55	70	90	90	155	180	195
VOLUME WITHDRAWN (cc)	160	220	280	360	360	620	720	780
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
CARBON TETRACHLORIDE	nd	nd	nd	nd	nd	22	1.6	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	1.0	nd
TRICHLOROFUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	2.7	nd	nd	51	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	100%	99%	102%	98%	103%	97%	99%	103%
CHLOROBENZENE	102%	101%	104%	100%	106%	97%	100%	104%
4 BROMOFLUORO BENZENE	99%	97%	99%	96%	102%	95%	96%	100%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES F. PICKER





FOSTER WHEELER PROJECT #1572.0298

JPL  
OAK GROVE DRIVE  
PASADENA, CA

HP Labs Project #2K0121W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

AREA COUNTS

	VPSV989-90 DUP	VPSV989-90 DUP	VPSV990-155	VPSV990-155	VPSV991-180	VPSV991-180	VPSV992-195	VPSV992-195
DATE	01/21/00	01/21/00	01/21/00	01/21/00	01/21/00	01/21/00	01/21/00	01/21/00
SAMPLING TIME	13:26	13:26	14:36	14:36	15:01	15:01	15:23	15:23
ANALYSIS TIME	13:30	13:30	14:37	14:37	15:02	15:02	15:27	15:27
SAMPLING DEPTH (feet)	90	90	155	155	180	180	195	195
VOLUME WITHDRAWN (cc)	360	360	620	620	720	720	780	780
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	nd	nd	10.3	3880	10.3	281	nd	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	11.6	16	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	5.8	4655	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	10.7	238	10.9	224	10.9	227	10.9	236
CHLOROBENZENE	17.7	552	17.8	507	17.8	520	17.8	544
4 BROMOFLUORO BENZENE	21.0	871	21.0	812	21.0	821	21.0	854

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES F. PICKER



FOSTER WHEELER PROJECT #1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0122W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

AREA COUNTS

	BLANK	BLANK	VPSV993-120	VPSV993-120	VPSV994-140	VPSV994-140	VPSV995-140 DUP	VPSV995-140 DUP	VPSV996-155	VPSV996-155
DATE	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00
SAMPLING TIME	5:17	5:17	7:13	7:13	7:36	7:36	8:03	8:03	8:26	8:26
ANALYSIS TIME	5:17	5:17	7:15	7:15	7:44	7:44	8:08	8:08	8:33	8:33
SAMPLING DEPTH (feet)	--	--	120	120	140	140	140	140	155	155
VOLUME WITHDRAWN (cc)	200	200	480	480	560	560	560	560	620	620
VOLUME INJECTED	1	1	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	nd	nd	10.1	1,537	10.4	707	10.3	749	10.2	1,011
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	8.9	567	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	5.7	15	6.0	13	6.0	11	5.8	12
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	11.4	59	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd	5.1	291
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	5.6	336	5.9	231	5.8	226	5.7	199
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES										
1,4 DIFLUORO BENZENE	10.8	222	10.7	239	11.0	209	10.9	216	10.8	209
CHLOROBENZENE	17.7	509	17.6	546	17.9	484	17.8	502	17.7	483
4 BROMOFLUORO BENZENE	20.9	815	21.0	927	21.1	750	21.0	788	21.0	762

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. RICKER



FOSTER WHEELER PROJECT #1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0122W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

AREA COUNTS

	VPSV997-170	VPSV997-170	VPSV998-185	VPSV998-185	VPSV999-25	VPSV999-25	VPSV1000-45	VPSV1000-45
DATE	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00
SAMPLING TIME	8:51	8:51	9:17	9:17	9:56	9:56	10:17	10:17
ANALYSIS TIME	8:58	8:58	9:22	9:22	9:58	9:58	10:21	10:21
SAMPLING DEPTH (feet)	170	170	185	185	25	25	45	45
VOLUME WITHDRAWN (cc)	680	680	740	740	100	100	180	180
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	10.2	1,037	10.2	1,858	nd	nd	nd	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	5.8	14	5.8	17	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	11.6	20	11.5	51	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	5.1	303	5.1	307	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	5.7	208	5.7	468	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	10.8	220	10.8	218	10.9	210	10.8	215
CHLOROBENZENE	17.8	510	17.8	508	17.8	486	17.7	516
4 BROMOFLUORO BENZENE	21.0	798	21.0	806	21.0	769	21.0	779

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER



FOSTER WHEELER PROJECT #1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0122W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

AREA COUNTS

	VPSV1001-45 DUP	VPSV1001-45 DUP	VPSV1002-65	VPSV1002-65	VPSV1003-80	VPSV1003-80	VPSV1004-110	VPSV1004-110
DATE	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00
SAMPLING TIME	10:39	10:39	11:03	11:03	11:28	11:28	11:53	11:53
ANALYSIS TIME	10:45	10:45	11:09	11:09	11:32	11:32	11:56	11:56
SAMPLING DEPTH (feet)	45	45	65	65	80	80	110	110
VOLUME WITHDRAWN (cc)	180	180	260	260	320	320	440	440
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	nd	nd	nd	nd	nd	nd	10.3	1,530
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	9.1	499
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	11.6	23
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	5.8	543
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	10.8	201	10.8	208	10.7	218	10.8	214
CHLORO BENZENE	17.8	449	17.7	486	17.7	503	17.8	498
4 BROMOFLUORO BENZENE	21.0	736	21.0	759	21.0	800	21.0	782

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E PICKER



FOSTER WHEELER PROJECT # 1572 0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0122W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

SOIL VAPOR DATA IN UG/L-VAPOR

	BLANK	VPSV993-120	VPSV994-140	VPSV995-140 DUP	VPSV996-155	VPSV997-170	VPSV998-185	VPSV999-25	VPSV1000-45
DATE	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00
SAMPLING TIME	05:17	07:13	07:36	08:03	08:26	08:51	09:17	09:56	10:17
ANALYSIS TIME	05:17	07:15	07:44	08:08	08:33	08:58	09:22	09:58	10:21
SAMPLING DEPTH (feet)	--	120	140	140	155	170	185	25	45
VOLUME WITHDRAWN (cc)	200	480	560	560	620	680	740	100	180
VOLUME INJECTED	1	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1	1
CARBON TETRACHLORIDE	nd	8.8	4.1	4.3	5.8	6.0	11	nd	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	1.9	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	1.7	1.4	1.2	1.3	1.6	1.9	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	3.8	nd	nd	nd	1.3	3.4	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	1.1	1.1	1.1	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	3.7	2.6	2.5	2.2	2.3	5.2	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES									
1,4 DIFLUORO BENZENE	97%	104%	91%	94%	91%	96%	95%	91%	93%
CHLOROBENZENE	98%	105%	93%	96%	93%	98%	97%	93%	99%
4 BROMOFLUORO BENZENE	95%	109%	88%	92%	89%	93%	94%	90%	91%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER



FOSTER WHEELER PROJECT # 1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0122W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

SOIL VAPOR DATA IN PPMV

		BLANK	VPSV993-120	VPSV994-140	VPSV995-140 DUP	VPSV996-155	VPSV997-170	VPSV998-185	VPSV999-25	VPSV1000-45
DATE		01/22/00	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00
SAMPLING TIME		05:17	07:13	07:36	08:03	08:26	08:51	09:17	09:56	10:17
ANALYSIS TIME		05:17	07:15	07:44	08:08	08:33	08:58	09:22	09:58	10:21
SAMPLING DEPTH (feet)		--	120	140	140	155	170	185	25	45
VOLUME WITHDRAWN (cc)		200	480	560	560	620	680	740	100	180
VOLUME INJECTED		1	1	1	1	1	1	1	1	1
DILUTION FACTOR		1	1	1	1	1	1	1	1	1
	DETECTION LIMITS (ppmv)									
CARBON TETRACHLORIDE	0.156	nd	1.4	0.6	0.7	0.9	0.9	1.7	nd	nd
CHLOROETHANE/BROMOMETHANE	0.369	nd	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	0.202	nd	0.4	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	0.242	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	0.242	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	0.247	nd	0.4	0.4	0.3	0.3	0.4	0.5	nd	nd
CIS-1,2-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	0.282	nd	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	0.145	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	0.143	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	0.143	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	0.180	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	0.180	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	0.182	nd	0.7	nd	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	0.381	nd	nd	nd	nd	nd	0.2	0.6	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	0.183	nd	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	0.198	nd	nd	nd	nd	0.2	1.1	0.2	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	0.128	nd	0.7	0.3	0.3	0.3	0.3	0.7	nd	nd
BENZENE	0.308	nd	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	0.226	nd	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	0.261	nd	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	0.226	nd	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	0.226	nd	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	0.481	nd	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES										
1,4 DIFLUORO BENZENE		97%	104%	91%	94%	91%	96%	95%	91%	93%
CHLORO BENZENE		98%	105%	93%	96%	93%	98%	97%	93%	99%
4 BROMOFLUORO BENZENE		95%	109%	88%	92%	89%	93%	94%	90%	91%

ND INDICATES NOT DETECTED AT LISTED DETECTION LIMITS FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER



FOSTER WHEELER PROJECT #1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0122W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

AREA COUNTS

	VPSV1005-125	VPSV1005-125	VPSV1006-155	VPSV1006-155	VPSV1007-155 DUP	VPSV1007-155 DUP	VPSV1008-170	VPSV1008-170
DATE	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00
SAMPLING TIME	12:41	12:41	13:03	13:03	13:27	13:27	13:53	13:53
ANALYSIS TIME	12:44	12:44	13:09	13:09	13:33	13:33	14:00	14:00
SAMPLING DEPTH (feet)	125	125	155	155	155	155	170	170
VOLUME WITHDRAWN (cc)	500	500	620	620	620	620	680	680
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	10.1	784	10.3	1,144	10.2	1,144	10.3	1,157
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	9.1	389	9.0	445	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	5.9	11	5.8	12	5.9	13
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	11.6	16	11.5	15	11.6	48
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFUOROMETHANE (FR11)	nd	nd	5.2	414	5.1	413	5.2	278
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	5.6	414	5.8	364	5.7	369	5.8	574
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES	nd	nd	nd	nd	nd	nd	nd	nd
1,4 DIFLUORO BENZENE	10.7	248	10.9	214	10.8	213	10.9	224
CHLORO BENZENE	17.7	570	17.8	498	17.7	492	17.8	522
4 BROMOFLUORO BENZENE	20.9	905	21.0	777	21.0	775	21.0	813

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER



FOSTER WHEELER PROJECT # 1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0122W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

SOIL VAPOR DATA IN PPMV

	VPSV1001-45 DUP	VPSV1002-65	VPSV1003-80	VPSV1004-110	VPSV1005-125	VPSV1006-155	VPSV1007-155 DUP	VPSV1008-170
DATE	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00
SAMPLING TIME	10:39	11:03	11:28	11:53	12:41	13:03	13:27	13:53
ANALYSIS TIME	10:45	11:09	11:32	11:56	12:44	13:09	13:33	14:00
SAMPLING DEPTH (feet)	45	65	80	110	125	155	155	170
VOLUME WITHDRAWN (cc)	180	260	320	440	500	620	620	680
VOLUME INJECTED								
DILUTION FACTOR	DETECTION LIMITS	1	1	1	1	1	1	1
	(ppmv)	1	1	1	1	1	1	1
CARBON TETRACHLORIDE	0.156	nd	nd	nd	1.4	0.7	1.0	1.0
CHLOROETHANE/BROMOMETHANE	0.369	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	0.202	nd	nd	nd	0.3	nd	0.3	nd
1,1-DICHLORO ETHANE	0.242	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	0.242	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	0.247	nd	nd	nd	nd	0.3	0.3	0.4
TRANS-1,2-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	0.282	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHANE	0.145	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	0.143	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	0.143	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	0.180	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	0.180	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	0.182	nd	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	0.381	nd	nd	nd	0.3	nd	0.2	0.6
TRICHLOROFLUOROMETHANE (FR11)	0.183	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	0.198	nd	nd	nd	nd	0.3	0.3	0.2
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	0.128	nd	nd	nd	0.8	0.6	0.5	0.8
BENZENE	0.308	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	0.226	nd	nd	nd	nd	nd	nd	nd
TOLUENE	0.261	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	0.226	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	0.226	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	0.481	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	87%	90%	95%	93%	108%	93%	93%	97%
CHLOROBENZENE	86%	93%	96%	95%	109%	95%	94%	100%
4 BROMOFLUORO BENZENE	86%	89%	94%	92%	106%	91%	91%	95%

ND INDICATES NOT DETECTED AT LISTED DETECTION LIMITS FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER





FOSTER WHEELER PROJECT # 1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0122W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

SOIL VAPOR DATA IN UG/L-VAPOR

	VPSV1001-45 DUP	VPSV1002-65	VPSV1003-80	VPSV1004-110	VPSV1005-125	VPSV1006-155	VPSV1007-155 DUP	VPSV1008-170
DATE	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00	01/22/00
SAMPLING TIME	10:39	11:03	11:28	11:53	12:41	13:03	13:27	13:53
ANALYSIS TIME	10:45	11:09	11:32	11:56	12:44	13:09	13:33	14:00
SAMPLING DEPTH (feet)	45	65	80	110	125	155	155	170
VOLUME WITHDRAWN (cc)	180	260	320	440	500	620	620	680
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
CARBON TETRACHLORIDE	nd	nd	nd	8.8	4.5	6.6	6.6	6.7
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	1.7	nd	1.3	1.5	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	1.3	1.3	1.4
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	1.5	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	1.0	1.0	3.2
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	1.5	1.5	1.0
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	6.0	4.6	4.0	4.1	6.3
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	87%	90%	95%	93%	108%	93%	93%	97%
CHLORO BENZENE	86%	93%	96%	95%	109%	95%	94%	100%
4 BROMOFLUORO BENZENE	86%	89%	94%	92%	106%	91%	91%	95%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER



FOSTER WHEELER PROJECT #1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0123W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

AREA COUNTS

	BLANK	BLANK	VPSV1009-20	VPSV1009-20	VPSV1010-35	VPSV1010-35	VPSV1011-50	VPSV1011-50	VPSV1012-70	VPSV1012-70
DATE	01/23/00	01/23/00	01/23/00	01/23/00	01/23/00	01/23/00	01/23/00	01/23/00	01/23/00	01/23/00
SAMPLING TIME	4:42	4:42	6:48	6:48	7:10	7:10	7:33	7:33	7:56	7:56
ANALYSIS TIME	4:42	4:42	6:50	6:50	7:13	7:13	7:36	7:36	8:00	8:00
SAMPLING DEPTH (feet)	--	--	20	20	35	35	50	50	70	70
VOLUME WITHDRAWN (cc)	200	200	80	80	140	140	200	200	280	280
VOLUME INJECTED	1	1	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,4 DIFLUORO BENZENE	10.9	205	10.9	217	10.8	217	10.8	219	10.8	213
CHLOROBENZENE	17.8	479	17.8	497	17.8	501	17.8	500	17.8	498
4 BROMOFLUORO BENZENE	21.0	732	21.0	779	21.0	795	21.0	801	21.0	784

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER



FOSTER WHEELER PROJECT # 1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0123W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

SOIL VAPOR DATA IN PPMV

		BLANK	VPSV1009-20	VPSV1010-35	VPSV1011-50	VPSV1012-70
DATE		01/23/00	01/23/00	01/23/00	01/23/00	01/23/00
SAMPLING TIME		04:42	06:48	07:10	07:33	07:56
ANALYSIS TIME		04:42	06:50	07:13	07:36	08:00
SAMPLING DEPTH (feet)		--	20	35	50	70
VOLUME WITHDRAWN (cc)		200	80	140	200	280
VOLUME INJECTED						
DILUTION FACTOR	DETECTION LIMITS	1	1	1	1	1
	(ppmv)	1	1	1	1	1
CARBON TETRACHLORIDE	0.156	nd	nd	nd	nd	nd
CHLOROETHANE/BROMOMETHANE	0.369	nd	nd	nd	nd	nd
CHLOROFORM	0.202	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	0.242	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	0.242	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	0.247	nd	nd	nd	nd	nd
DICHLOROMETHANE	0.282	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	0.145	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	0.143	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	0.143	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	0.180	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	0.180	nd	nd	nd	nd	nd
TRICHLORO ETHENE	0.182	nd	nd	nd	nd	nd
VINYL CHLORIDE	0.381	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	0.183	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	0.198	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	0.128	nd	nd	nd	nd	nd
BENZENE	0.308	nd	nd	nd	nd	nd
ETHYLBENZENE	0.226	nd	nd	nd	nd	nd
TOLUENE	0.261	nd	nd	nd	nd	nd
m&p-XYLENES	0.226	nd	nd	nd	nd	nd
o-XYLENE	0.226	nd	nd	nd	nd	nd
CHLOROMETHANE	0.481	nd	nd	nd	nd	nd
SURROGATES						
1,4 DIFLUORO BENZENE		89%	94%	94%	95%	93%
CHLOROBENZENE		92%	95%	96%	96%	95%
4 BROMOFLUORO BENZENE		86%	91%	93%	94%	92%

ND INDICATES NOT DETECTED AT LISTED DETECTION LIMITS FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. GLOVER



FOSTER WHEELER PROJECT # 1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0123W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

SOIL VAPOR DATA IN UG/L-VAPOR

	BLANK	VPSV1009-20	VPSV1010-35	VPSV1011-50	VPSV1012-70
DATE	01/23/00	01/23/00	01/23/00	01/23/00	01/23/00
SAMPLING TIME	04:42	06:48	07:10	07:33	07:56
ANALYSIS TIME	04:42	06:50	07:13	07:36	08:00
SAMPLING DEPTH (feet)	--	20	35	50	70
VOLUME WITHDRAWN (cc)	200	80	140	200	280
VOLUME INJECTED	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1
CARBON TETRACHLORIDE	nd	nd	nd	nd	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd
SURROGATES					
1,4 DIFLUORO BENZENE	89%	94%	94%	95%	93%
CHLOROBENZENE	92%	95%	96%	96%	95%
4 BROMOFLUORO BENZENE	86%	91%	93%	94%	92%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER



FOSTER WHEELER PROJECT #1572.0298

JPL  
OAK GROVE DRIVE  
PASADENA, CA

HP Labs Project #2K0123W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

AREA COUNTS

	VPSV1013-70 DUP		VPSV1013-70 DUP		VPSV1014-85	VPSV1014-85	VPSV1015-100	VPSV1015-100	VPSV1016-110	VPSV1016-110	VPSV1017-130	VPSV1017-130
DATE	01/23/00	01/23/00	01/23/00	01/23/00	01/23/00	01/23/00	01/23/00	01/23/00	01/23/00	01/23/00	01/23/00	01/23/00
SAMPLING TIME	8:19	8:19	8:42	8:42	9:06	9:06	9:30	9:30	9:53	9:58	9:53	9:58
ANALYSIS TIME	8:23	8:23	8:47	8:47	9:11	9:11	9:35	9:35	9:58	9:58	9:53	9:58
SAMPLING DEPTH (feet)	70	70	85	85	100	100	110	110	130	130	130	130
VOLUME WITHDRAWN (cc)	280	280	340	340	400	400	440	440	520	520	520	520
VOLUME INJECTED	1	1	1	1	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	nd	nd	10.2	1003	10.3	1322	10.2	1836	10.3	263	10.3	263
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	11.5	25	11.6	36	11.5	43	11.6	160	11.6	160
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	5.6	3977	5.7	4598	5.6	4689	5.7	712	5.7	712
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,4 DIFLUORO BENZENE	10.8	218	10.8	212	10.9	218	10.8	227	10.8	211	10.8	211
CHLORO BENZENE	17.8	503	17.8	494	17.8	499	17.8	523	17.8	488	17.8	488
4 BROMOFLUORO BENZENE	21.0	793	21.0	775	21.1	788	21.0	831	21.0	773	21.0	773

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER



FOSTER WHEELER PROJECT # 1572.0298

JPL  
OAK GROVE DRIVE  
PASADENA, CA

HP Labs Project #2K0123W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR  
SOIL VAPOR DATA IN UG/L-VAPOR

	VPSV1013-70 DUP	VPSV1014-85	VPSV1015-100	VPSV1016-110	VPSV1017-130
DATE	01/23/00	01/23/00	01/23/00	01/23/00	01/23/00
SAMPLING TIME	08:19	08:42	09:06	09:30	09:53
ANALYSIS TIME	08:23	08:47	09:11	09:35	09:58
SAMPLING DEPTH (feet)	70	85	100	110	130
VOLUME WITHDRAWN (cc)	280	340	400	440	520
VOLUME INJECTED	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1
CARBON TETRACHLORIDE	nd	5.8	7.6	11	1.5
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	1.7	2.3	2.8	10
VINYL CHLORIDE	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	44	51	52	7.9
BENZENE	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd
SURROGATES					
1,4 DIFLUORO BENZENE	95%	92%	95%	99%	92%
CHLORO BENZENE	96%	95%	96%	100%	93%
4 BROMOFLUORO BENZENE	93%	91%	92%	97%	91%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES F. PICKER



FOSTER WHEELER PROJECT # 1572.0298

JPL

OAK GROVE DRIVE

PASADENA, CA

HP Labs Project #2K0123W1

GC SHIMADZU 14A FRONT

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR

SOIL VAPOR DATA IN PPMV

	VPSV1013-70 DUP	VPSV1014-85	VPSV1015-100	VPSV1016-110	VPSV1017-130
DATE	01/23/00	01/23/00	01/23/00	01/23/00	01/23/00
SAMPLING TIME	08:19	08:42	09:06	09:30	09:53
ANALYSIS TIME	08:23	08:47	09:11	09:35	09:58
SAMPLING DEPTH (feet)	70	85	100	110	130
VOLUME WITHDRAWN (cc)	280	340	400	440	520
VOLUME INJECTED					
DILUTION FACTOR	DETECTION LIMITS				
	(ppmv)				
CARBON TETRACHLORIDE	0.156	nd	0.9	1.2	1.6
CHLOROETHANE/BROMOMETHANE	0.369	nd	nd	nd	0.2
CHLOROFORM	0.202	nd	nd	nd	nd
1,1-DICHLORO ETHANE	0.242	nd	nd	nd	nd
1,2-DICHLORO ETHANE	0.242	nd	nd	nd	nd
1,1-DICHLORO ETHENE	0.247	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	0.247	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	0.247	nd	nd	nd	nd
DICHLOROMETHANE	0.282	nd	nd	nd	nd
TETRACHLORO ETHENE	0.145	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	0.143	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	0.143	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	0.180	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	0.180	nd	nd	nd	nd
TRICHLORO ETHENE	0.182	nd	nd	nd	nd
VINYL CHLORIDE	0.381	nd	0.3	0.4	0.5
TRICHLOROFLUOROMETHANE (FR11)	0.183	nd	nd	nd	1.9
DICHLORODIFLUOROMETHANE (FR12)	0.198	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	0.128	nd	nd	nd	nd
BENZENE	0.308	nd	5.6	6.5	6.6
ETHYLBENZENE	0.226	nd	nd	nd	1.0
TOLUENE	0.261	nd	nd	nd	nd
m&p-XYLENES	0.226	nd	nd	nd	nd
o-XYLENE	0.226	nd	nd	nd	nd
CHLOROMETHANE	0.481	nd	nd	nd	nd
SURROGATES					
1,4 DIFLUORO BENZENE	95%	92%	95%	99%	92%
CHLOROBENZENE	96%	95%	96%	100%	93%
4 BROMOFLUORO BENZENE	93%	91%	92%	97%	91%

ND INDICATES NOT DETECTED AT LISTED DETECTION LIMITS FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

**APPENDIX B-2**  
**CHAIN-OF-CUSTODY FORMS**





Transglobal Environmental Geochemistry  
432 N. Cedros Avenue  
Solana Beach, CA 92075  
(619) 793-0401 Fax: (619) 793-0404

# Chain of Study Record

TEG Project #: 2K0117W1

Outside Lab: \_\_\_\_\_

Client: Foster Wheeler  
Address: 611 Anton Blvd. Ste. 800  
Costa Mesa, CA 92626  
Phone: 714/444-5527 Fax: 714/444-5560

Date: January 17, 2000 Page 1 Of 2  
Client Project #: 1572.0298 Project Manager: B.G. Randolph  
Location: JPL - Pasadena  
Collector: M. Hunt, B.G. Randolph Date of Collection: 1/17/00

Sample #	Depth	Time	Date	Sample Type	Container Type	VOA 8010	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (gas & diesel)	VOA 8020 (BTEX)	VOA 8020 (MTBE)	TRPH 418.1	PEST/PCB's 8080	VOC 8260	Semi Vol 8270	PNA 8310/8270	Organic Lead	Total Lead	Metals																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
<u>Matthew L. Hunt</u>	<u>1/17/00 / 1454</u>	<u>[Signature]</u>	<u>1-17-00</u>
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time

Total # of containers: \_\_\_\_\_  
Chain of Custody seals Y/N/NA \_\_\_\_\_  
Seals intact? Y/N/NA \_\_\_\_\_  
Received good condition/cold \_\_\_\_\_

Notes: \_\_\_\_\_



Transglobal Environmental Geochemistry  
432 N. Cedros Avenue  
Solana Beach, CA 92075  
(619) 793-0401 Fax: (619) 793-0404

# Chain of Study Record

TEG Project #: 2K0117W1

Outside Lab: \_\_\_\_\_

Client: Foster Wheeler

Address: 611 Anton Blvd. Ste. 800

Costa Mesa, CA 92626

Phone: 714/444-5527

Fax: 714/444-5560

Date: January 17, 2000

Page 2 Of 2

Client Project #: 1572.0298

Project Manager: B.G. Randolph

Location: JPL - Pasadena

Collector: M. Hunt, B.G. Randolph

Date of Collection: 1/17/00

Sample #	Depth	Time	Date	Sample Type	Container Type	VOA 8010	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (gas & diesel)	VOA 8020 (BTEX)	VOA 8020 (MTBE)	TRPH 418.1	PEST/PCB's 8080	VOC 8260	Semi Vol 8270	PNA 8310/8270	Organic Lead	Total Lead	Metals	Field Notes	Total # of containers
-	80	1215	1/17/00	Vapor	Syringe	No sample	-	-	-	-	-	-	-	-	-	-	-	-	-	Volume purged in cc: -	-
-	100	1217		No sample	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VPSV-925	115	1219				X	X	X	X	X	X	X	X	X	X	X	X	X	X	460	2
VPSV-926	140	1248				X	X	X	X	X	X	X	X	X	X	X	X	X	X	560	2
VPSV-927	160	1315				X	X	X	X	X	X	X	X	X	X	X	X	X	X	640	2
VPSV-928	180	1342				X	X	X	X	X	X	X	X	X	X	X	X	X	X	720	2
VPSV-929(Dup)	180	1409				X	X	X	X	X	X	X	X	X	X	X	X	X	X	720	2
-	195	1432		No Sample	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished by: (signature)

Date / Time

Received by: (signature)

Date / Time

Matthew L. Hunt

1/17/00/1454

[Signature]

1454  
1-17-00

Relinquished by: (signature)

Date / Time

Received by: (signature)

Date / Time

Total # of containers:

Chain of Custody seals Y/N/NA

Seals intact? Y/N/NA

Received good condition/cold

Notes:



Transglobal Environmental Geochemistry  
432 N. Cedros Avenue  
Solana Beach, CA 92075  
(619) 793-0401 Fax: (619) 793-0404

# Chain of Custody Record

TEG Project #: 2K0118W1

Outside Lab: \_\_\_\_\_

Client: Foster Wheeler  
Address: 611 Anton Blvd. Ste. 800  
Costa Mesa, CA 92626  
Phone: 714/444-5527 Fax: 714/444-5560

Date: January 18, 2000 Page 1 Of 2  
Client Project #: 1572.0298 Project Manager: B.G. Randolph  
Location: JPL - Pasadena  
Collector: B.G. Randolph, M. Hunt Date of Collection: 1/18/00

Sample #	Depth	Time	Date	Sample Type	Container Type	VOA 8010	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (gas & diesel)	VOA 8020 (BTEX)	VOA 8020 (MTBE)	TRPH 418.1	PEST/PCB's 8080	VOC 8260	Semi Vol 8270	PNA 8310/8270	Organic Lead	Total Lead	Metals																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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Relinquished by: (signature) Matthew L. Hunt Date / Time 1/18/00 / 1406  
Received by: (signature) [Signature] Date / Time 1-18-00

Relinquished by: (signature) \_\_\_\_\_ Date / Time \_\_\_\_\_  
Received by: (signature) \_\_\_\_\_ Date / Time \_\_\_\_\_

Total # of containers: \_\_\_\_\_  
Chain of Custody seals Y/N/NA \_\_\_\_\_  
Seals intact? Y/N/NA \_\_\_\_\_  
Received good condition/cold \_\_\_\_\_

Notes: \_\_\_\_\_

Transglobal Environmental Geochemistry  
432 N. Cedros Avenue  
Solana Beach, CA 92075  
(619) 793-0401 Fax: (619) 793-0404

## Chain of Custody Record

TEG Project #: 2K0118 W/

Outside Lab:

Client: Foster Wheeler

Address: 611 Anton Blvd. Ste. 800

Costa Mesa, CA 92626

Phone: 714/444-5527

Fax: 714/444-5560

Date: January 18, 2000

Page 2 Of 2

Client Project #: 1572.0298

Project Manager: B.G. Randolph

Location: JPL-Pasadena

Collector: B.G. Randolph, M. Hunt

Date of Collection: 1/18/00

[illegible]

Relinquished by: (signature)

Date / Time

Received by: (signature)

Date / Time

Matthew L Hunt

1/18/00/1406

*[Signature]*

1406  
1-15-80

Relinquished by: (signature)

Date / Time

Received by: (signature)

Date / Time

Total # of containers:

Chain of Custody seals Y/N/NA

Seals intact? Y/N/NA

Received good condition/cold

Notes:



Transglobal Environmental Geochemistry  
432 N. Cedros Avenue  
Solana Beach, CA 92075  
(619) 793-0401 Fax: (619) 793-0404

# Chain of Study Record

TEG Project #: 2K0119W1

Outside Lab: \_\_\_\_\_

Client: Foster Wheeler  
Address: 611 Anton Blvd. Ste. 800  
Costa Mesa, CA 92626  
Phone: 714/444-5527 Fax: 714/444-5560

Date: January 19, 2000 Page 1 Of 2  
Client Project #: 1572.0298 Project Manager: B.G. Randolph  
Location: JPL - Pasadena  
Collector: M. Hunt Date of Collection: 1/19/00

Sample #	Depth	Time	Date	Sample Type	Container Type	VOA 8010	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (gas & diesel)	VOA 8020 (BTEX)	VOA 8020 (MTBE)	TRPH 418.1	PEST/PCB's 8080	VOC 8260	Semi Vol 8270	PNA 8310/8270	Organic Lead	Total Lead	Metals											Field Notes	Total # of containers
Blank	-	0531	1/19/00	Vapor	Syringe	X				X																				Volume purged in cc: -	2
VPSV-945	20	0741				X				X																				80	2
VPSV-946	40	0801				X				X																				160	2
VPSV-947 (Dup)	40	0824				X				X																				160	2
VPSV-948	60	0848				X				X																				240	2
VPSV-949	85	0915				X				X																				340	2
VPSV-950	105	0939				X				X																				420	2
VPSV-951	120	1003				X				X																				480	2
VPSV-952	140	1027				X				X																				560	2
VPSV-953 (Dup)	140	1050				X				X																				560	2
-	160	1113		No sample-Tip #8 plugged; cannot blow or purge																	-	-									
-	180	1115		No sample-Tip #9 plugged; cannot blow or purge																	-	-									
VPSV-954	200	1117				X				X																				800	2
-	20	1140		No sample-Tip #1 plugged; cannot blow or purge																	-	-									
VPSV-955	35	1142				X				X																				140	2

Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
<u>Matthew L. Hunt</u>	<u>1/19/00 / 1359</u>	<u>[Signature]</u>	<u>1359</u>
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
			<u>1-19-00</u>

Total # of containers: \_\_\_\_\_  
Chain of Custody seals Y/N/NA \_\_\_\_\_  
Seals intact? Y/N/NA \_\_\_\_\_  
Received good condition/cold \_\_\_\_\_

Notes: \_\_\_\_\_

TransGlobal Environmental Geochemistry  
432 N. Cedros Avenue  
Solana Beach, CA 92075  
(619) 793-0401 Fax: (619) 793-0404

## Chain of Custody Record

TEG Project # : 2K0119W1

Outside Lab:

Client: Foster Wheeler  
Address: 611 Anton Blvd. Ste. 800  
Costa Mesa, CA 92626  
Phone: 714/444-5527 Fax: 714/444-5560

Date: January 19, 2000 Page 2 Of 2  
Client Project #: 1572.0298 Project Manager: B.G. Randolph  
Location: JPL - Pasadena  
Collector: M. Hunt Date of Collection: 1/19/00

[illegible]

Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
<i>Matthew L. Hunt</i>	1/19/00 / 1359	<i>[Signature]</i>	1359 1-19-00
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time

Total # of containers:  
Chain of Custody seals Y/N/NA  
Seals intact? Y/N/NA  
Received good condition/cold

Notes:



Transglobal Environmental Geochemistry  
432 N. Cedros Avenue  
Solana Beach, CA 92075  
(619) 793-0401 Fax: (619) 793-0404

# Chain of Custody Record

TEG Project #: 2K0/20W1

Outside Lab: \_\_\_\_\_

Client: Foster Wheeler  
Address: 611 Anton Blvd. Ste. 800  
Costa Mesa, CA 92626  
Phone: 714/444-5527 Fax: 714/444-5560

Date: January 20, 2000 Page 1 Of 2  
Client Project #: 1572.0298 Project Manager: B.G. Randolph  
Location: JPL - Pasadena  
Collector: M. Hunt Date of Collection: 1/20/00

Sample #	Depth	Time	Date	Sample Type	Container Type	VOA 8010	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (gas & diesel)	VOA 8020 (BTEX)	VOA 8020 (MTBE)	TRPH 418.1	PEST/PCB's 8080	VOC 8260	Semi Vol 8270	PNA 8310/8270	Organic Lead	Total Lead	Metals																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
<u>Matthew L. Hunt</u>	<u>1/20/00/1430</u>	<u>[Signature]</u>	<u>1-20-00</u>
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time

Total # of containers: \_\_\_\_\_  
Chain of Custody seals Y/N/NA \_\_\_\_\_  
Seals intact? Y/N/NA \_\_\_\_\_  
Received good condition/cold \_\_\_\_\_

Notes: \_\_\_\_\_







Transglobal Environmental Geochemistry  
432 N. Cedros Avenue  
Solana Beach, CA 92075  
(619) 793-0401 Fax: (619) 793-0404

# Chain of Custody Record

TEG Project #: 2K0121W1

Outside Lab: \_\_\_\_\_

Client: Foster Wheeler  
Address: 611 Anton Blvd. Ste. 800  
Costa Mesa, CA 92626  
Phone: 714/444-5527 Fax: 714/444-5560

Date: January 21, 2000 Page 1 Of 2  
Client Project #: 1572.0298 Project Manager: B.G. Randolph  
Location: JPL - Pasadena  
Collector: M. Hunt Date of Collection: 1/21/00

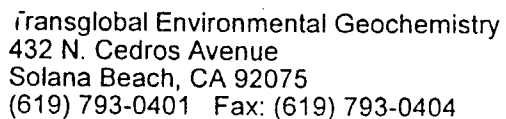
Sample #	Depth	Time	Date	Sample Type	Container Type	VOA 8010	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (gas & diesel)	VOA 8020 (BTEX)	VOA 8020 (MTBE)	TRPH 418.1	PEST/PCB's 8080	VOC 8260	Semi Vol 8270	PNA 8310/8270	Organic Lead	Total Lead	Metals																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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Relinquished by: (signature) Matthew L. Hunt Date / Time 1/21/00/1532  
Received by: (signature) [Signature] Date / Time 1-21-00

Relinquished by: (signature) \_\_\_\_\_ Date / Time \_\_\_\_\_  
Received by: (signature) \_\_\_\_\_ Date / Time \_\_\_\_\_

Total # of containers: \_\_\_\_\_  
Chain of Custody seals Y/N/NA \_\_\_\_\_  
Seals intact? Y/N/NA \_\_\_\_\_  
Received good condition/cold \_\_\_\_\_

Notes:



TEG Project #: 2K0121W1

Outside Lab:

Client: Faster Wheeler  
Address: 611 Anton Blvd. Ste. 800  
Costa Mesa, CA 92626  
Phone: 714/444-5527 Fax: 714/444-5560

Date: January 21, 2000 Page 2 Of 2  
Client Project #: 1572.0298 Project Manager: B.G. Randolph  
Location: JPL-Pasadena  
Collector: M. Hunt Date of Collection: 1/21/00

Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
<i>Matthew L. Hunt</i>	1/21/00 / 1532	<i>[Signature]</i>	1532 1-21-00
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time

Total # of containers:  
Chain of Custody seals Y/N/NA  
Seals intact? Y/N/NA  
Received good condition/cold



Transglobal Environmental Geochemistry  
432 N. Cedros Avenue  
Solana Beach, CA 92075  
(619) 793-0401 Fax: (619) 793-0404

# Chain of Study Record

TEG Project #: 2K0122W1

Outside Lab: \_\_\_\_\_

Client: Foster Wheeler

Address: 611 Anton Blvd. Ste. 800

Costa Mesa, CA 92626

Phone: 714/444-5527

Fax: 714/444-5560

Date: January 22, 2000

Page 1 Of 2

Client Project #: 1572.0298

Project Manager: B.G. Randolph

Location: JPL - Pasadena

Collector: M. Hunt

Date of Collection: 1/22/00

Sample #	Depth	Time	Date	Sample Type	Container Type	VOA 8010	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (gas & diesel)	VOA 8020 (BTEX)	VOA 8020 (MTBE)	TRPH 418.1	PEST/PCB's 8080	VOC 8260	Semi Vol 8270	PNA 8310/8270	Organic Lead	Total Lead	Metals																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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Relinquished by: (signature)

Date / Time

Received by: (signature)

Date / Time

Matthew L. Hunt 1/22/00/1358

[Signature]

1358  
1-22-00

Relinquished by: (signature)

Date / Time

Received by: (signature)

Date / Time

Total # of containers:

Chain of Custody seals Y/N/NA

Seals intact? Y/N/NA

Received good condition/cold

Notes:

Transglobal Environmental Geochemistry  
432 N. Cedros Avenue  
Solana Beach, CA 92075  
(619) 793-0401 Fax: (619) 793-0404

## Chain of custody Record

TEG Project #: 2K0122W1

Outside Lab:

Client: Foster Wheeler  
Address: 611 Anton Blvd. Ste. 800  
Costa Mesa, CA 92626  
Phone: 714/444-5527 Fax: 714/444-5560

Date: January 22, 2000 Page 2 Of 2  
Client Project #: 1572.0298 Project Manager: B.G. Randolph  
Location: JPL-Pasadena  
Collector: M. Hunt Date of Collection: 1/22/00

[illegible]

Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
<i>Matthew L. Hunt</i>	1/22/00/1358	<i>[Signature]</i>	1358 1-22-00
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time

Total # of containers:  
Chain of Custody seals Y/N/NA  
Seals intact? Y/N/NA  
Received good condition/cold

Notes:



Transglobal Environmental Geochemistry  
432 N. Cedros Avenue  
Solana Beach, CA 92075  
(619) 793-0401 Fax: (619) 793-0404

# Chain of Custody Record

TEG Project #: 2K0123W1

Outside Lab: \_\_\_\_\_

Client: Foster Wheeler

Address: 611 Anton Blvd. Ste. 800

Costa Mesa, CA 92626

Phone: 714/444-5527

Fax: 714/444-5560

Date: January 23, 2000

Page 1 Of 1

Client Project #: 1572.0298

Project Manager: B.G. Randolph

Location: JPL - Pasadena

Collector: M. Hunt

Date of Collection: 1/23/00

Sample #	Depth	Time	Date	Sample Type	Container Type	VOA 8010	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (gas & diesel)	VOA 8020 (BTEX)	VOA 8020 (MTBE)	TRPH 418.1	PEST/PCB's 8080	VOC 8260	Semi Vol 8270	PNA 8310/8270	Organic Lead	Total Lead	Metals	Field Notes	Total # of containers
Blank	—	0442	1/23/00	Vapor	Syringe	X				X										Volume purged in cc: —	2
VPSV-1009	20	0648				X				X										80	2
VPSV-1010	35	0710				X				X										140	2
VPSV-1011	50	0733				X				X										200	2
VPSV-1012	70	0756				X				X										280	2
VPSV-1013 (Dup)	85	0819				X				X										280	2
VPSV-1014	85	0842				X				X										340	2
VPSV-1015	100	0906				X				X										400	2
VPSV-1016	110	0930				X				X										440	2
—	120	0951		No sample; Tip #8 plugged; cannot blow or purge																—	—
VPSV-1017	130	0953				X				X										520	2

Relinquished by: (signature)

Date / Time

Received by: (signature)

Date / Time

Matthew L. Hunt 1/23/00/1004

[Signature] 1-23-00

Relinquished by: (signature)

Date / Time

Received by: (signature)

Date / Time

Total # of containers:

Chain of Custody seals Y/N/NA

Seals intact? Y/N/NA

Received good condition/cold

Notes:

**APPENDIX B-3**  
**INITIAL THREE-POINT CALIBRATION DATA**

SOIL GAS INITIAL LCS STANDARD REPORT (3-POINT CALIBRATION VERIFICATION)

LAB: WINN 1

SUPPLY SOURCE: ACCUSTANDARD LOT# A7120170

INSTRUMENT: SHIMADZU GC14A FRONT

COMPOUND	DETECTOR	CAL DATE	AVE CF	MASS	RT	AREA	CF	%DIFF
CARBON TETRACHLORIDE	HALL	10/04/99	174	20	10.5	3,973	199	14.3%
CHLOROFORM	HALL	10/04/99	301	20	9.2	6,824	341	13.2%
1,1-DICHLORO ETHANE	HALL	10/04/99	219	20	8.0	4,658	233	6.3%
1,2-DICHLORO ETHANE	HALL	10/04/99	290	20	10.6	6,202	310	6.8%
1,1-DICHLORO ETHENE	PID	10/04/99	8.90	20	6.1	189	9.45	6.2%
CIS-1,2-DICHLORO ETHENE	PID	10/04/99	12.2	20	8.9	255	12.8	4.5%
TRANS-1,2-DICHLORO ETHENE	PID	10/04/99	21.1	20	7.2	441	22.1	4.5%
DICHLOROMETHANE	HALL	10/04/99	227	20	6.8	5,057	253	11.5%
TETRACHLORO ETHENE	PID	10/04/99	13.2	20	16.1	277	13.9	4.9%
1,1,1,2-TETRACHLORO ETHANE/CHLOROBENZENE	HALL	10/04/99	170	40	18.2	7,670	192	12.9%
1,1,2,2-TETRACHLORO ETHANE	HALL	10/04/99	200	20	21.1	4,541	227	13.8%
1,1,1-TRICHLORO ETHANE	HALL	10/04/99	218	20	10.0	4,686	234	7.3%
1,1,2-TRICHLORO ETHANE	HALL	10/04/99	223	20	15.3	4,991	250	12.0%
TRICHLORO ETHENE	PID	10/04/99	15.3	20	11.8	314	15.7	2.6%
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	HALL	10/04/99	90.5	20	5.9	2,077	104	14.8%
BENZENE	PID	10/04/99	26.8	20	10.7	560	28.0	4.5%
ETHYLBENZENE	PID	10/04/99	29.4	20	18.1	616	30.8	4.8%
TOLUENE	PID	10/04/99	27.3	20	14.5	558	27.9	2.2%
m&p-XYLENES	PID	10/04/99	30.7	40	18.3	1,284	32.1	4.6%
o-XYLENE	PID	10/04/99	27.9	20	19.5	575	28.8	3.0%
1,4 DIFLUORO BENZENE	PID	10/04/99	11.5	20	11.1	230	11.5	0.0%
CHLOROBENZENE	PID	10/04/99	26.1	20	18.0	513	25.7	1.7%
4 BROMOFLUORO BENZENE	PID	10/04/99	42.7	20	21.3	876	43.8	2.6%

ANALYSES PERFORMED IN HP LAB'S MOBILE LABORATORY

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER

## INITIAL CALIBRATION (3-POINT)

WINNEBAGO 1

SUPPLY SOURCE: ACCUSTANDARD LOT# A9050254

INSTRUMENT: SHIMADZU GC14A FRONT

COMPOUND	DETECTOR	CAL DATE	LOW STANDARD				MID STANDARD				HIGH STANDARD				SUMMARY			
			RT	MASS	AREA	CF	RT	MASS	AREA	CF	RT	MASS	AREA	CF	AVE RT	AVE CF	SD	%RSD
CARBON TETRACHLORIDE	HALL	10/04/99	10.5	2.0	315	158	10.5	20.0	3386	169	10.5	150	29177	195	10.5	174	18.9	10.9%
CHLOROETHANE/BROMOMETHANE	HALL	10/04/99	4.9	4.0	445	111	4.9	40.0	4858	121	4.8	300	43285	144	4.9	126	16.9	13.5%
CHLOROFORM	HALL	10/04/99	9.2	2.0	627	314	9.2	20.0	5702	285	9.2	150	45808	305	9.2	301	14.6	4.9%
1,1-DICHLORO ETHANE	HALL	10/04/99	7.9	2.0	440	220	7.9	20.0	4162	208	7.9	150	34393	229	7.9	219	10.6	4.8%
1,2-DICHLORO ETHANE	HALL	10/04/99	10.6	2.0	603	302	10.6	20.0	5589	279	10.6	150	43484	290	10.6	290	11.0	3.8%
1,1-DICHLORO ETHENE	PID	10/04/99	6.1	2.0	18.9	9.5	6.1	20.0	175	8.8	6.1	150	1263	8.4	6.1	8.90	0.5	5.9%
CIS-1,2-DICHLORO ETHENE	PID	10/04/99	8.8	2.0	26.4	13.2	8.8	20.0	242	12.1	8.8	150	1716	11.4	8.8	12.2	0.9	7.3%
TRANS-1,2-DICHLORO ETHENE	PID	10/04/99	7.2	2.0	45.6	22.8	7.2	20.0	418	20.9	7.2	150	2936	19.6	7.2	21.1	1.6	7.7%
DICHLOROMETHANE	HALL	10/04/99	6.8	2.0	424	212	6.8	20.0	4251	213	6.8	150	38390	256	6.8	227	25.2	11.1%
TETRACHLORO ETHENE	PID	10/04/99	16.1	2.0	27.8	13.9	16.1	20.0	264	13.2	16.1	150	1870	12.5	16.1	13.2	0.7	5.4%
1,1,1,2-TETRACHLORO ETHANE/CHLOROBENZENE	HALL	10/04/99	18.2	4.0	646	162	18.2	40.0	6917	173	18.2	300	52472	175	18.2	170	7.2	4.3%
1,1,2,2-TETRACHLORO ETHANE	HALL	10/04/99	21.0	2.0	348	174	21.0	20.0	4145	207	21.0	150	32646	218	21.0	200	22.8	11.4%
1,1,1-TRICHLORO ETHANE	HALL	10/04/99	10.0	2.0	446	223	10.0	20.0	4112	206	10.0	150	33961	226	10.0	218	11.2	5.1%
1,1,2-TRICHLORO ETHANE	HALL	10/04/99	15.3	2.0	405	203	15.3	20.0	4377	219	15.3	150	37069	247	15.3	223	22.6	10.1%
TRICHLORO ETHENE	PID	10/04/99	11.8	2.0	34.0	17.0	11.8	20.0	298	14.9	11.8	150	2088	13.9	11.8	15.3	1.6	10.3%
VINYL CHLORIDE	HALL	10/04/99	4.1	2.0	469	235	4.1	20.0	4093	205	4.1	150	27583	184	4.1	208	25.4	12.2%
TRICHLOROFLUOROMETHANE (FR11)	HALL	10/04/99	5.3	2.0	548	274	5.3	20.0	5632	282	5.3	150	38991	260	5.3	272	11.0	4.0%
DICHLORODIFLUOROMETHANE (FR12)	HALL	10/04/99	3.7	2.0	82.9	41.5	3.6	20.0	1113	55.7	3.6	150	10799	72.0	3.6	56.4	15.3	27.1%
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	HALL	10/04/99	5.9	2.0	149	74.5	5.9	20.0	1848	92.4	5.9	150	15672	104	5.9	90.5	15.1	16.7%
BENZENE	PID	10/04/99	10.6	2.0	58.6	29.3	10.6	20.0	531	26.6	10.6	150	3700	24.7	10.6	26.8	2.3	8.7%
ETHYLBENZENE	PID	10/04/99	18.1	2.0	67.5	33.8	18.1	20.0	577	28.9	18.1	150	3847	25.6	18.1	29.4	4.1	13.9%
TOLUENE	PID	10/04/99	14.5	2.0	59.8	29.9	14.5	20.0	536	26.8	14.5	150	3771	25.1	14.5	27.3	2.4	8.8%
m&p-XYLENES	PID	10/04/99	18.3	4.0	140	35.0	18.3	40.0	1211	30.3	18.3	300	8047	26.8	18.3	30.7	4.1	13.4%
o-XYLENE	PID	10/04/99	19.5	2.0	64.9	32.5	19.5	20.0	532	26.6	19.5	150	3678	24.5	19.5	27.9	4.1	14.7%
CHLOROMETHANE	HALL	10/04/99	4.1	2.0	119	59.50	4.0	20.0	1780	89.0	4.0	150	16245	108	4.0	85.6	24.6	28.7%
1,4 DIFLUORO BENZENE	PID	10/04/99	11.1	2.0	26.3	13.2	11.1	20.0	226	11.3	11.1	150	1521	10.1	11.1	11.5	1.5	13.2%
CHLOROBENZENE	PID	10/04/99	18.0	2.0	56.0	28.0	18.0	20.0	499	25.0	18.0	150	3790	25.3	18.0	26.1	1.7	6.4%
4 BROMOFLUORO BENZENE	PID	10/04/99	21.3	2.0	92.6	46.3	21.3	20.0	837	41.9	21.3	150	5990	39.9	21.3	42.7	3.3	7.6%

ANALYSES PERFORMED IN HP LAB'S MOBILE LABORATORY

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER



**APPENDIX B-4**

**DAILY OPENING, CLOSING, AND CONTINUING  
CALIBRATION VERIFICATION REPORTS**

## QA/QC - CALIBRATION DATA

DATE: 01/21/00

HP Labs Project #2K0121W1

WINNEBAGO 1

SUPPLY SOURCE: (CALIBRATION VERIFICATION)

ACCUSTANDARD LOT # A7120170

INSTRUMENT: SHIMADZU GC14A FRONT

COMPOUND	DETECTOR	AVE RF	CONTINUING STANDARD				
			MASS	RT	AREA	CF	%DIFF
CARBON TETRACHLORIDE	HALL	174	20	10.2	3,316	166	4.6%
1,1-DICHLORO ETHANE	HALL	219	20	7.7	4,027	201	8.1%
1,2-DICHLORO ETHANE	HALL	290	20	10.4	5,635	282	2.9%
1,1-DICHLORO ETHENE	PID	8.90	20	5.8	167	8.35	6.2%
CIS-1,2-DICHLORO ETHENE	PID	12.2	20	8.6	220	11.0	9.8%
TRANS-1,2-DICHLORO ETHENE	PID	21.1	20	7.0	392	19.6	7.1%
TETRACHLORO ETHENE	PID	13.2	20	15.8	282	14.1	6.8%
1,1,1-TRICHLORO ETHANE	HALL	218	20	9.7	4,019	201	7.9%
1,1,2-TRICHLORO ETHANE	HALL	223	20	15.0	4,302	215	3.5%
TRICHLORO ETHENE	PID	15.3	20	11.6	291	14.6	4.9%
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	HALL	90.5	20	5.7	1,488	74.4	17.8%
BENZENE	PID	26.8	20	10.4	446	22.3	16.8%
ETHYLBENZENE	PID	29.4	20	17.9	477	23.9	18.9%
TOLUENE	PID	27.3	20	14.2	509	25.5	6.8%
m&p-XYLENES	PID	30.7	40	18.1	999	25.0	18.6%
o-XYLENE	PID	27.9	20	19.2	490	24.5	12.2%
1,4 DIFLUORO BENZENE	PID	11.5	20	10.8	203	10.2	11.7%
CHLOROBENZENE	PID	26.1	20	17.7	495	24.8	5.2%
4 BROMOFLUORO BENZENE	PID	42.7	20	21.0	738	36.9	13.6%

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER

## QA/QC - CALIBRATION DATA

DATE: 01/21/00

HP Labs Project #2K0121W1

WINNEBAGO 1

SUPPLY SOURCE: CONTINUING CALIBRATION (OPENING) ACCUSTANDARD LOT # A9050254

SUPPLY SOURCE: QUALITY CONTROL (CLOSING) ACCUSTANDARD LOT # A7120170

INSTRUMENT: SHIMADZU GC14A FRONT

COMPOUND	DETECTOR	AVE RF	OPENING STANDARD					CLOSING STANDARD				
			MASS	RT	AREA	CF	%DIFF	MASS	RT	AREA	CF	%DIFF
CARBON TETRACHLORIDE	HALL	174	20	10.2	3,817	191	9.8%	20	10.2	3,426	171	1.4%
1,1-DICHLORO ETHANE	HALL	219	20	7.7	4,775	239	9.0%	20	7.7	4,003	200	8.6%
1,2-DICHLORO ETHANE	HALL	290	20	10.4	6,612	331	13.9%	20	10.4	6,227	311	7.3%
1,1-DICHLORO ETHENE	PID	8.90	20	5.8	158	7.90	11.2%	20	5.8	147	7.35	17.4%
CIS-1,2-DICHLORO ETHENE	PID	12.2	20	8.6	210	10.5	13.9%	20	8.6	213	10.7	12.7%
TRANS-1,2-DICHLORO ETHENE	PID	21.1	20	7.0	360	18.0	14.7%	20	7.0	340	17.0	19.4%
TETRACHLORO ETHENE	PID	13.2	20	15.8	245	12.3	7.2%	20	15.8	244	12.2	7.6%
1,1,1-TRICHLORO ETHANE	HALL	218	20	9.7	4,844	242	10.9%	20	9.7	4,524	226	3.6%
1,1,2-TRICHLORO ETHANE	HALL	223	20	15.0	5,089	254	14.2%	20	15.0	4,197	210	5.8%
TRICHLORO ETHENE	PID	15.3	20	11.5	263	13.2	14.1%	20	11.6	269	13.5	12.1%
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	HALL	90.5	20	5.7	1,792	89.6	1.0%	20	5.7	1,600	80.0	11.6%
BENZENE	PID	26.8	20	10.4	465	23.3	13.2%	20	10.4	470	23.5	12.3%
ETHYLBENZENE	PID	29.4	20	17.8	541	27.1	8.0%	20	17.9	495	24.8	15.8%
TOLUENE	PID	27.3	20	14.2	481	24.1	11.9%	20	14.2	482	24.1	11.7%
m&p-XYLENES	PID	30.7	40	18.0	1,103	27.6	10.2%	40	18.1	1,096	27.4	10.7%
o-XYLENE	PID	27.9	20	19.2	480	24.0	14.0%	20	19.2	484	24.2	13.3%
1,4 DIFLUORO BENZENE	PID	11.5	20	10.8	201	10.1	12.6%	20	10.8	202	10.1	12.2%
CHLOROBENZENE	PID	26.1	20	17.7	466	23.3	10.7%	20	17.7	517	25.9	1.0%
4 BROMOFLUORO BENZENE	PID	42.7	20	20.9	813	40.7	4.8%	20	21.0	817	40.9	4.3%

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER

## QA/QC - CALIBRATION DATA

DATE: 01/20/00

HP Labs Project #2K0120W1

WINNEBAGO 1

SUPPLY SOURCE: (CALIBRATION VERIFICATION)

ACCUSTANDARD LOT # A7120170

INSTRUMENT: SHIMADZU GC14A FRONT

COMPOUND	DETECTOR	AVE RF	CONTINUING STANDARD				
			MASS	RT	AREA	CF	%DIFF
CARBON TETRACHLORIDE	HALL	174	20	10.2	2,821	141	18.8%
1,1-DICHLORO ETHANE	HALL	219	20	7.7	3,618	181	17.4%
1,2-DICHLORO ETHANE	HALL	290	20	10.3	5,253	263	9.5%
1,1-DICHLORO ETHENE	PID	8.90	20	5.8	152	7.60	14.6%
CIS-1,2-DICHLORO ETHENE	PID	12.2	20	8.6	206	10.3	15.6%
TRANS-1,2-DICHLORO ETHENE	PID	21.1	20	7.0	352	17.6	16.6%
TETRACHLORO ETHENE	PID	13.2	20	15.8	246	12.3	6.8%
1,1,1-TRICHLORO ETHANE	HALL	218	20	9.7	3,625	181	17.0%
1,1,2-TRICHLORO ETHANE	HALL	223	20	15.0	3,775	189	15.3%
TRICHLORO ETHENE	PID	15.3	20	11.5	297	14.9	2.9%
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	HALL	90.5	20	5.7	1,521	76.1	16.0%
BENZENE	PID	26.8	20	10.4	449	22.5	16.2%
ETHYLBENZENE	PID	29.4	20	17.9	505	25.3	14.1%
TOLUENE	PID	27.3	20	14.2	513	25.7	6.0%
m&p-XYLENES	PID	30.7	40	18.1	824	20.6	32.9%
o-XYLENE	PID	27.9	20	19.2	484	24.2	13.3%
1,4 DIFLUORO BENZENE	PID	11.5	20	10.8	202	10.1	12.2%
CHLOROBENZENE	PID	26.1	20	17.8	459	23.0	12.1%
4 BROMOFLUORO BENZENE	PID	42.7	20	21.0	766	38.3	10.3%

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER

## QA/QC - CALIBRATION DATA

DATE: 01/20/00

HP Labs Project #2K0120W1

WINNEBAGO 1

SUPPLY SOURCE: CONTINUING CALIBRATION (OPENING) ACCUSTANDARD LOT # A9050254

SUPPLY SOURCE: QUALITY CONTROL (CLOSING) ACCUSTANDARD LOT # A7120170

INSTRUMENT: SHIMADZU GC14A FRONT

COMPOUND	DETECTOR	AVE RF	OPENING STANDARD					CLOSING STANDARD				
			MASS	RT	AREA	CF	%DIFF	MASS	RT	AREA	CF	%DIFF
CARBON TETRACHLORIDE	HALL	174	20	10.2	3,590	180	3.3%	20	10.2	3,297	165	5.1%
1,1-DICHLORO ETHANE	HALL	219	20	7.7	4,714	236	7.6%	20	7.7	4,056	203	7.4%
1,2-DICHLORO ETHANE	HALL	290	20	10.3	6,174	309	6.3%	20	10.4	4,814	241	17.1%
1,1-DICHLORO ETHENE	PID	8.90	20	5.8	158	7.90	11.2%	20	5.8	155	7.75	12.9%
CIS-1,2-DICHLORO ETHENE	PID	12.2	20	8.6	223	11.2	8.6%	20	8.6	230	11.5	5.7%
TRANS-1,2-DICHLORO ETHENE	PID	21.1	20	7.0	368	18.4	12.8%	20	7.0	358	17.9	15.2%
TETRACHLORO ETHENE	PID	13.2	20	15.8	249	12.5	5.7%	20	15.8	241	12.1	8.7%
1,1,1-TRICHLORO ETHANE	HALL	218	20	9.7	4,559	228	4.4%	20	9.7	4,262	213	2.4%
1,1,2-TRICHLORO ETHANE	HALL	223	20	15.0	4,701	235	5.5%	20	15.0	4,358	218	2.2%
TRICHLORO ETHENE	PID	15.3	20	11.5	276	13.8	9.8%	20	11.5	256	12.8	16.3%
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	HALL	90.5	20	5.7	1,915	95.8	5.8%	20	5.7	2,088	104.4	15.4%
BENZENE	PID	26.8	20	10.4	491	24.6	8.4%	20	10.4	451	22.6	15.9%
ETHYLBENZENE	PID	29.4	20	17.8	520	26.0	11.6%	20	17.9	489	24.5	16.8%
TOLUENE	PID	27.3	20	14.2	495	24.8	9.3%	20	14.2	462	23.1	15.4%
m&p-XYLENES	PID	30.7	40	18.0	1,117	27.9	9.0%	40	18.1	1,070	26.8	12.9%
o-XYLENE	PID	27.9	20	19.2	488	24.4	12.5%	20	19.2	510	25.5	8.6%
1,4 DIFLUORO BENZENE	PID	11.5	20	10.8	208	10.4	9.6%	20	10.8	191	9.6	17.0%
CHLOROBENZENE	PID	26.1	20	17.7	491	24.6	5.9%	20	17.7	478	23.9	8.4%
4 BROMOFLUORO BENZENE	PID	42.7	20	21.0	821	41.1	3.9%	20	21.0	806	40.3	5.6%

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER

## QA/QC - CALIBRATION DATA

DATE: 01/19/00

HP Labs Project #2K0119W1

WINNEBAGO 1

SUPPLY SOURCE: (CALIBRATION VERIFICATION)

ACCUSTANDARD LOT # A7120170

INSTRUMENT: SHIMADZU GC14A FRONT

COMPOUND	DETECTOR	AVE RF	CONTINUING STANDARD				
			MASS	RT	AREA	CF	%DIFF
CARBON TETRACHLORIDE	HALL	174	20	10.3	3,034	152	12.7%
1,1-DICHLORO ETHANE	HALL	219	20	7.8	4,081	204	6.9%
1,2-DICHLORO ETHANE	HALL	290	20	10.4	5,578	279	3.9%
1,1-DICHLORO ETHENE	PID	8.90	20	5.9	168	8.40	5.6%
CIS-1,2-DICHLORO ETHENE	PID	12.2	20	8.7	249	12.5	2.0%
TRANS-1,2-DICHLORO ETHENE	PID	21.1	20	7.1	449	22.5	6.4%
TETRACHLORO ETHENE	PID	13.2	20	15.9	294	14.7	11.4%
1,1,1-TRICHLORO ETHANE	HALL	218	20	9.8	3,849	192	11.8%
1,1,2-TRICHLORO ETHANE	HALL	223	20	15.1	4,034	202	9.5%
TRICHLORO ETHENE	PID	15.3	20	11.6	270	13.5	11.8%
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	HALL	90.5	20	5.8	1,626	81.3	10.2%
BENZENE	PID	26.8	20	10.5	483	24.2	9.9%
ETHYLBENZENE	PID	29.4	20	17.9	479	24.0	18.5%
TOLUENE	PID	27.3	20	14.3	591	29.6	8.2%
m&p-XYLENES	PID	30.7	40	18.1	903	22.6	26.5%
o-XYLENE	PID	27.9	20	19.3	453	22.7	18.8%
1,4 DIFLUORO BENZENE	PID	11.5	20	10.9	228	11.4	0.9%
CHLOROBENZENE	PID	26.1	20	17.8	533	26.7	2.1%
4 BROMOFLUORO BENZENE	PID	42.7	20	21.0	862	43.1	0.9%

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER

## QA/QC - CALIBRATION DATA

DATE: 01/19/00

HP Labs Project #2K0119W1

WINNEBAGO 1

SUPPLY SOURCE: CONTINUING CALIBRATION (OPENING) ACCUSTANDARD LOT # A9050254

SUPPLY SOURCE: QUALITY CONTROL (CLOSING) ACCUSTANDARD LOT # A7120170

INSTRUMENT: SHIMADZU GC14A FRONT

COMPOUND	DETECTOR	AVE RF	OPENING STANDARD					CLOSING STANDARD				
			MASS	RT	AREA	CF	%DIFF	MASS	RT	AREA	CF	%DIFF
CARBON TETRACHLORIDE	HALL	174	20	10.2	3,897	195	12.1%	20	10.2	3,586	179	3.2%
1,1-DICHLORO ETHANE	HALL	219	20	7.7	4,303	215	1.8%	20	7.7	3,850	193	12.1%
1,2-DICHLORO ETHANE	HALL	290	20	10.4	6,544	327	12.7%	20	10.4	6,008	300	3.5%
1,1-DICHLORO ETHENE	PID	8.90	20	5.8	166	8.30	6.7%	20	5.9	160	8.00	10.1%
CIS-1,2-DICHLORO ETHENE	PID	12.2	20	8.6	242	12.1	0.8%	20	8.6	222	11.1	9.0%
TRANS-1,2-DICHLORO ETHENE	PID	21.1	20	7.0	408	20.4	3.3%	20	7.0	379	19.0	10.2%
TETRACHLORO ETHENE	PID	13.2	20	15.8	269	13.5	1.9%	20	15.8	252	12.6	4.5%
1,1,1-TRICHLORO ETHANE	HALL	218	20	9.7	4,492	225	2.9%	20	9.7	4,412	221	1.1%
1,1,2-TRICHLORO ETHANE	HALL	223	20	15.0	5,075	254	13.9%	20	15.1	4,063	203	8.8%
TRICHLORO ETHENE	PID	15.3	20	11.5	297	14.9	2.9%	20	11.6	303	15.2	1.0%
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	HALL	90.5	20	5.7	2,009	100.5	11.0%	20	5.7	1,961	98.1	8.3%
BENZENE	PID	26.8	20	10.4	532	26.6	0.7%	20	10.4	497	24.9	7.3%
ETHYLBENZENE	PID	29.4	20	17.8	610	30.5	3.7%	20	17.9	513	25.7	12.8%
TOLUENE	PID	27.3	20	14.2	535	26.8	2.0%	20	14.3	523	26.2	4.2%
m&p-XYLENES	PID	30.7	40	18.0	1,200	30.0	2.3%	40	18.1	996	24.9	18.9%
o-XYLENE	PID	27.9	20	19.2	530	26.5	5.0%	20	19.3	506	25.3	9.3%
1,4 DIFLUORO BENZENE	PID	11.5	20	10.8	224	11.2	2.6%	20	10.8	218	10.9	5.2%
CHLOROBENZENE	PID	26.1	20	17.7	479	24.0	8.2%	20	17.8	480	24.0	8.0%
4 BROMOFLUORO BENZENE	PID	42.7	20	21.0	879	44.0	2.9%	20	21.0	852	42.6	0.2%

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER

## QA/QC - CALIBRATION DATA

DATE: 01/18/00

HP Labs Project #2K0118W1

WINNEBAGO 1

SUPPLY SOURCE: (CALIBRATION VERIFICATION)

ACCUSTANDARD LOT # A7120170

INSTRUMENT: SHIMADZU GC14A FRONT

COMPOUND	DETECTOR	AVE RF	CONTINUING STANDARD				
			MASS	RT	AREA	CF	%DIFF
CARBON TETRACHLORIDE	HALL	174	20	10.2	3,238	162	6.8%
1,1-DICHLORO ETHANE	HALL	219	20	7.7	4,846	242	10.6%
1,2-DICHLORO ETHANE	HALL	290	20	10.4	4,966	248	14.5%
1,1-DICHLORO ETHENE	PID	8.90	20	5.8	156	7.80	12.4%
CIS-1,2-DICHLORO ETHENE	PID	12.2	20	8.6	217	10.9	11.1%
TRANS-1,2-DICHLORO ETHENE	PID	21.1	20	7.0	370	18.5	12.3%
TETRACHLORO ETHENE	PID	13.2	20	15.8	240	12.0	9.1%
1,1,1-TRICHLORO ETHANE	HALL	218	20	9.7	4,188	209	4.1%
1,1,2-TRICHLORO ETHANE	HALL	223	20	15.0	4,855	243	9.0%
TRICHLORO ETHENE	PID	15.3	20	11.5	269	13.5	12.1%
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	HALL	90.5	20	5.7	2,063	103.2	14.0%
BENZENE	PID	26.8	20	10.4	481	24.1	10.3%
ETHYLBENZENE	PID	29.4	20	17.9	535	26.8	9.0%
TOLUENE	PID	27.3	20	14.2	473	23.7	13.4%
m&p-XYLENES	PID	30.7	40	18.1	1,060	26.5	13.7%
o-XYLENE	PID	27.9	20	19.2	467	23.4	16.3%
1,4 DIFLUORO BENZENE	PID	11.5	20	10.8	202	10.1	12.2%
CHLOROBENZENE	PID	26.1	20	17.7	444	22.2	14.9%
4 BROMOFLUORO BENZENE	PID	42.7	20	21.0	778	38.9	8.9%

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER



## QA/QC - CALIBRATION DATA

DATE: 01/18/00

HP Labs Project #2K0118W1

WINNEBAGO 1

SUPPLY SOURCE: CONTINUING CALIBRATION (OPENING) ACCUSTANDARD LOT # A9050254

SUPPLY SOURCE: QUALITY CONTROL (CLOSING) ACCUSTANDARD LOT # A7120170

INSTRUMENT: SHIMADZU GC14A FRONT

COMPOUND	DETECTOR	AVE RF	OPENING STANDARD					CLOSING STANDARD				
			MASS	RT	AREA	CF	%DIFF	MASS	RT	AREA	CF	%DIFF
CARBON TETRACHLORIDE	HALL	174	20	10.2	3,848	192	10.7%	20	10.2	3,145	157	9.5%
1,1-DICHLORO ETHANE	HALL	219	20	7.7	4,718	236	7.7%	20	7.7	4,643	232	6.0%
1,2-DICHLORO ETHANE	HALL	290	20	10.4	6,641	332	14.4%	20	10.4	5,110	256	12.0%
1,1-DICHLORO ETHENE	PID	8.90	20	5.8	155	7.75	12.9%	20	5.9	161	8.05	9.6%
CIS-1,2-DICHLORO ETHENE	PID	12.2	20	8.6	227	11.4	7.0%	20	8.6	233	11.7	4.5%
TRANS-1,2-DICHLORO ETHENE	PID	21.1	20	7.0	382	19.1	9.5%	20	7.0	396	19.8	6.2%
TETRACHLORO ETHENE	PID	13.2	20	15.8	249	12.5	5.7%	20	15.8	258	12.9	2.3%
1,1,1-TRICHLORO ETHANE	HALL	218	20	9.7	4,624	231	5.9%	20	9.7	4,087	204	6.4%
1,1,2-TRICHLORO ETHANE	HALL	223	20	15.0	5,099	255	14.4%	20	15.0	4,277	214	4.0%
TRICHLORO ETHENE	PID	15.3	20	11.5	277	13.9	9.5%	20	11.6	287	14.4	6.2%
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	HALL	90.5	20	5.7	1,973	98.7	9.0%	20	5.7	2,074	103.7	14.6%
BENZENE	PID	26.8	20	10.4	499	25.0	6.9%	20	10.4	515	25.8	3.9%
ETHYLBENZENE	PID	29.4	20	17.9	525	26.3	10.7%	20	17.9	579	29.0	1.5%
TOLUENE	PID	27.3	20	14.2	494	24.7	9.5%	20	14.2	511	25.6	6.4%
m&p-XYLENES	PID	30.7	40	18.1	1,126	28.2	8.3%	40	18.1	1,149	28.7	6.4%
o-XYLENE	PID	27.9	20	19.2	490	24.5	12.2%	20	19.2	505	25.3	9.5%
1,4 DIFLUORO BENZENE	PID	11.5	20	10.8	209	10.5	9.1%	20	10.8	215	10.8	6.5%
CHLOROBENZENE	PID	26.1	20	17.7	482	24.1	7.7%	20	17.8	469	23.5	10.2%
4 BROMOFLUORO BENZENE	PID	42.7	20	21.0	810	40.5	5.2%	20	21.0	837	41.9	2.0%

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER

## QA/QC - CALIBRATION DATA

DATE: 01/17/00  
HP Labs Project #2K0117W1  
WINNEBAGO 1

SUPPLY SOURCE: (CALIBRATION VERIFICATION OF EST)  
ACCUSTANDARD LOT # A8090246  
INSTRUMENT: SHIMADZU GC14A FRONT

COMPOUND	DETECTOR	AVE RF	CONTINUING STANDARD				
			MASS	RT	AREA	CF	%DIFF
CARBON TETRACHLORIDE	HALL	174	5.0	10.3	1,033	207	18.9%
1,1-DICHLORO ETHANE	HALL	219	5.0	7.7	1,136	227	3.7%
1,2-DICHLORO ETHANE	HALL	290	5.0	10.4	1,955	391	34.7%
1,1-DICHLORO ETHENE	PID	8.90	5.0	5.9	38	7.64	14.2%
CIS-1,2-DICHLORO ETHENE	PID	12.2	5.0	8.6	60	12.0	1.6%
TRANS-1,2-DICHLORO ETHENE	PID	21.1	5.0	7.0	92	18.5	12.4%
TETRACHLORO ETHENE	PID	13.2	5.0	15.8	79	15.8	19.8%
1,1,1-TRICHLORO ETHANE	HALL	218	5.0	9.7	1,215	243	11.3%
1,1,2-TRICHLORO ETHANE	HALL	223	5.0	15.1	1,329	266	19.3%
TRICHLORO ETHENE	PID	15.3	5.0	11.6	78	15.7	2.4%
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	HALL	90.5	5.0	5.7	481	96.2	6.3%
BENZENE	PID	26.8	5.0	10.4	142	28.4	6.0%
ETHYLBENZENE	PID	29.4	5.0	17.9	137	27.4	6.8%
TOLUENE	PID	27.3	5.0	14.3	151	30.2	10.6%
m&p-XYLENES	PID	30.7	10	18.1	335	33.5	9.1%
o-XYLENE	PID	27.9	5.0	19.3	149	29.8	6.8%

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER

## QA/QC - CALIBRATION DATA

DATE: 01/17/00

HP Labs Project #2K0117W1

WINNEBAGO 1

SUPPLY SOURCE: CONTINUING CALIBRATION (OPENING) ACCUSTANDARD LOT # A9050254

SUPPLY SOURCE: QUALITY CONTROL (CLOSING) ACCUSTANDARD LOT # A7120170

INSTRUMENT: SHIMADZU GC14A FRONT

COMPOUND	DETECTOR	AVE RF	OPENING STANDARD					CLOSING STANDARD				
			MASS	RT	AREA	CF	%DIFF	MASS	RT	AREA	CF	%DIFF
CARBON TETRACHLORIDE	HALL	174	20	10.3	3,732	187	7.4%	20	10.2	3,762	188	8.2%
1,1-DICHLORO ETHANE	HALL	219	20	7.8	4,932	247	12.6%	20	7.7	4,393	220	0.3%
1,2-DICHLORO ETHANE	HALL	290	20	10.4	6,469	323	11.4%	20	10.4	6,518	326	12.3%
1,1-DICHLORO ETHENE	PID	8.90	20	5.9	173	8.65	2.8%	20	5.8	147	7.35	17.4%
CIS-1,2-DICHLORO ETHENE	PID	12.2	20	8.6	240	12.0	1.6%	20	8.6	215	10.8	11.9%
TRANS-1,2-DICHLORO ETHENE	PID	21.1	20	7.0	412	20.6	2.4%	20	7.0	363	18.2	14.0%
TETRACHLORO ETHENE	PID	13.2	20	15.9	263	13.2	0.4%	20	15.8	236	11.8	10.6%
1,1,1-TRICHLORO ETHANE	HALL	218	20	9.8	4,786	239	9.6%	20	9.7	4,638	232	6.2%
1,1,2-TRICHLORO ETHANE	HALL	223	20	15.1	5,010	251	12.4%	20	15.0	4,739	237	6.4%
TRICHLORO ETHENE	PID	15.3	20	11.6	294	14.7	3.9%	20	11.5	266	13.3	13.1%
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	HALL	90.5	20	5.7	1,942	97.1	7.3%	20	5.7	1,961	98.1	8.3%
BENZENE	PID	26.8	20	10.4	525	26.3	2.1%	20	10.4	472	23.6	11.9%
ETHYLBENZENE	PID	29.4	20	17.9	542	27.1	7.8%	20	17.8	470	23.5	20.0%
TOLUENE	PID	27.3	20	14.3	526	26.3	3.7%	20	14.2	472	23.6	13.6%
m&p-XYLENES	PID	30.7	40	18.1	1,185	29.6	3.5%	40	18.0	1,049	26.2	14.6%
o-XYLENE	PID	27.9	20	19.3	509	25.5	8.8%	20	19.2	462	23.1	17.2%
1,4 DIFLUORO BENZENE	PID	11.5	20	10.9	220	11.0	4.3%	20	10.8	198	9.9	13.9%
CHLOROBENZENE	PID	26.1	20	17.8	519	26.0	0.6%	20	17.7	494	24.7	5.4%
4 BROMOFLUORO BENZENE	PID	42.7	20	21.1	850	42.5	0.5%	20	21.0	772	38.6	9.6%

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER

## QA/QC - CALIBRATION DATA

DATE: 01/23/00  
 HP Labs Project #2K0123W1  
 WINNEBAGO 1

SUPPLY SOURCE: (CALIBRATION VERIFICATION OF EST)  
 ACCUSTANDARD LOT # A8090246  
 INSTRUMENT: SHIMADZU GC14A FRONT

COMPOUND	DETECTOR	AVE RF	CONTINUING STANDARD				
			MASS	RT	AREA	CF	%DIFF
CARBON TETRACHLORIDE	HALL	174	5.0	10.2	930	186	7.0%
1,1-DICHLORO ETHANE	HALL	219	5.0	7.7	965	193	11.9%
1,2-DICHLORO ETHANE	HALL	290	5.0	10.4	1,785	357	23.0%
1,1-DICHLORO ETHENE	PID	8.90	5.0	5.9	37	7.42	16.6%
CIS-1,2-DICHLORO ETHENE	PID	12.2	5.0	8.6	59	11.8	3.4%
TRANS-1,2-DICHLORO ETHENE	PID	21.1	5.0	7.0	95	18.9	10.4%
TETRACHLORO ETHENE	PID	13.2	5.0	15.8	61	12.2	7.3%
1,1,1-TRICHLORO ETHANE	HALL	218	5.0	9.7	1,192	238	9.2%
1,1,2-TRICHLORO ETHANE	HALL	223	5.0	15.0	1,335	267	19.8%
TRICHLORO ETHENE	PID	15.3	5.0	11.6	67	13.5	11.9%
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	HALL	90.5	5.0	5.7	405	81.0	10.5%
BENZENE	PID	26.8	5.0	10.4	120	24.0	10.4%
ETHYLBENZENE	PID	29.4	5.0	17.9	122	24.4	17.0%
TOLUENE	PID	27.3	5.0	14.3	127	25.4	7.0%
m&p-XYLENES	PID	30.7	10	18.1	282	28.2	8.1%
o-XYLENE	PID	27.9	5.0	19.2	151	30.2	8.2%

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER

## QA/QC - CALIBRATION DATA

DATE: 01/23/00

HP Labs Project #2K0123W1

WINNEBAGO 1

SUPPLY SOURCE: CONTINUING CALIBRATION (OPENING) ACCUSTANDARD LOT # A9050254

SUPPLY SOURCE: QUALITY CONTROL (CLOSING) ACCUSTANDARD LOT # A7120170

INSTRUMENT: SHIMADZU GC14A FRONT

COMPOUND	DETECTOR	AVE RF	OPENING STANDARD					CLOSING STANDARD				
			MASS	RT	AREA	CF	%DIFF	MASS	RT	AREA	CF	%DIFF
CARBON TETRACHLORIDE	HALL	174	20	10.2	3,558	178	2.4%	20	10.2	3,288	164	5.4%
1,1-DICHLORO ETHANE	HALL	219	20	7.7	4,172	209	4.8%	20	7.6	3,865	193	11.8%
1,2-DICHLORO ETHANE	HALL	290	20	10.3	5,172	259	10.9%	20	10.3	5,475	274	5.7%
1,1-DICHLORO ETHENE	PID	8.90	20	5.8	156	7.80	12.4%	20	5.8	161	8.05	9.6%
CIS-1,2-DICHLORO ETHENE	PID	12.2	20	8.6	235	11.8	3.7%	20	8.6	220	11.0	9.8%
TRANS-1,2-DICHLORO ETHENE	PID	21.1	20	7.0	374	18.7	11.4%	20	6.9	361	18.1	14.5%
TETRACHLORO ETHENE	PID	13.2	20	15.8	275	13.8	4.2%	20	15.8	293	14.7	11.0%
1,1,1-TRICHLORO ETHANE	HALL	218	20	9.7	4,665	233	6.8%	20	9.7	4,096	205	6.2%
1,1,2-TRICHLORO ETHANE	HALL	223	20	15.0	4,783	239	7.3%	20	15.0	4,870	244	9.3%
TRICHLORO ETHENE	PID	15.3	20	11.5	294	14.7	3.9%	20	11.5	286	14.3	6.5%
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	HALL	90.5	20	5.7	1,734	86.7	4.2%	20	5.6	1,556	77.8	14.0%
BENZENE	PID	26.8	20	10.4	518	25.9	3.4%	20	10.3	470	23.5	12.3%
ETHYLBENZENE	PID	29.4	20	17.8	564	28.2	4.1%	20	17.8	501	25.1	14.8%
TOLUENE	PID	27.3	20	14.2	548	27.4	0.4%	20	14.2	593	29.7	8.6%
m&p-XYLENES	PID	30.7	40	18.0	1,238	31.0	0.8%	40	18.0	1,059	26.5	13.8%
o-XYLENE	PID	27.9	20	19.2	548	27.4	1.8%	20	19.2	600	30.0	7.5%
1,4 DIFLUORO BENZENE	PID	11.5	20	10.8	223	11.2	3.0%	20	10.8	219	11.0	4.8%
CHLOROBENZENE	PID	26.1	20	17.7	545	27.3	4.4%	20	17.7	564	28.2	8.0%
4 BROMOFLUORO BENZENE	PID	42.7	20	20.9	905	45.3	6.0%	20	20.9	808	40.4	5.4%

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER

## QA/QC - CALIBRATION DATA

DATE: 01/22/00

HP Labs Project #2K0122W1

WINNEBAGO 1

SUPPLY SOURCE: (CALIBRATION VERIFICATION)

ACCUSTANDARD LOT # A7120170

INSTRUMENT: SHIMADZU GC14A FRONT

COMPOUND	DETECTOR	AVE RF	CONTINUING STANDARD				%DIFF
			MASS	RT	AREA	CF	
CARBON TETRACHLORIDE	HALL	174	20	10.2	3,755	188	8.0%
1,1-DICHLORO ETHANE	HALL	219	20	7.7	4,302	215	1.8%
1,2-DICHLORO ETHANE	HALL	290	20	10.4	6,431	322	10.8%
1,1-DICHLORO ETHENE	PID	8.90	20	5.8	150	7.50	15.7%
CIS-1,2-DICHLORO ETHENE	PID	12.2	20	8.6	213	10.7	12.7%
TRANS-1,2-DICHLORO ETHENE	PID	21.1	20	7.0	355	17.8	15.9%
TETRACHLORO ETHENE	PID	13.2	20	15.8	270	13.5	2.3%
1,1,1-TRICHLORO ETHANE	HALL	218	20	9.7	4,545	227	4.1%
1,1,2-TRICHLORO ETHANE	HALL	223	20	15.0	4,842	242	8.7%
TRICHLORO ETHENE	PID	15.3	20	11.5	312	15.6	2.0%
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	HALL	90.5	20	5.7	1,506	75.3	16.8%
BENZENE	PID	26.8	20	10.4	453	22.7	15.5%
ETHYLBENZENE	PID	29.4	20	17.9	529	26.5	10.0%
TOLUENE	PID	27.3	20	14.2	538	26.9	1.5%
m&p-XYLENES	PID	30.7	40	18.0	1,084	27.1	11.7%
o-XYLENE	PID	27.9	20	19.2	552	27.6	1.1%
1,4 DIFLUORO BENZENE	PID	11.5	20	10.8	203	10.2	11.7%
CHLOROBENZENE	PID	26.1	20	17.7	530	26.5	1.5%
4 BROMOFLUORO BENZENE	PID	42.7	20	21.0	818	40.9	4.2%

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER

## QA/QC - CALIBRATION DATA

DATE: 01/22/00

HP Labs Project #2K0122W1

WINNEBAGO 1

SUPPLY SOURCE: CONTINUING CALIBRATION (OPENING) ACCUSTANDARD LOT # A9050254

SUPPLY SOURCE: QUALITY CONTROL (CLOSING) ACCUSTANDARD LOT # A7120170

INSTRUMENT: SHIMADZU GC14A FRONT

COMPOUND	DETECTOR	AVE RF	OPENING STANDARD					CLOSING STANDARD				
			MASS	RT	AREA	CF	%DIFF	MASS	RT	AREA	CF	%DIFF
CARBON TETRACHLORIDE	HALL	174	20	10.2	3,080	154	11.4%	20	10.2	2,854	143	17.9%
1,1-DICHLORO ETHANE	HALL	219	20	7.7	3,810	191	13.1%	20	7.7	3,950	198	9.9%
1,2-DICHLORO ETHANE	HALL	290	20	10.3	5,041	252	13.2%	20	10.4	4,811	241	17.1%
1,1-DICHLORO ETHENE	PID	8.90	20	5.8	167	8.35	6.2%	20	5.9	150	7.50	15.7%
CIS-1,2-DICHLORO ETHENE	PID	12.2	20	8.6	222	11.1	9.0%	20	8.6	201	10.1	17.6%
TRANS-1,2-DICHLORO ETHENE	PID	21.1	20	7.0	395	19.8	6.4%	20	7.0	348	17.4	17.5%
TETRACHLORO ETHENE	PID	13.2	20	15.8	269	13.5	1.9%	20	15.8	235	11.8	11.0%
1,1,1-TRICHLORO ETHANE	HALL	218	20	9.7	3,766	188	13.7%	20	9.7	3,903	195	10.6%
1,1,2-TRICHLORO ETHANE	HALL	223	20	15.0	4,198	210	5.8%	20	15.0	4,270	214	4.2%
TRICHLORO ETHENE	PID	15.3	20	11.5	301	15.1	1.6%	20	11.6	247	12.4	19.3%
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	HALL	90.5	20	5.7	1,582	79.1	12.6%	20	5.7	1,539	77.0	15.0%
BENZENE	PID	26.8	20	10.4	482	24.1	10.1%	20	10.4	432	21.6	19.4%
ETHYLBENZENE	PID	29.4	20	17.8	507	25.4	13.8%	20	17.8	476	23.8	19.0%
TOLUENE	PID	27.3	20	14.2	524	26.2	4.0%	20	14.2	445	22.3	18.5%
m&p-XYLENES	PID	30.7	40	18.0	1,047	26.2	14.7%	40	18.0	1,029	25.7	16.2%
o-XYLENE	PID	27.9	20	19.2	481	24.1	13.8%	20	19.2	468	23.4	16.1%
1,4 DIFLUORO BENZENE	PID	11.5	20	10.8	222	11.1	3.5%	20	10.8	186	9.3	19.1%
CHLOROBENZENE	PID	26.1	20	17.7	506	25.3	3.1%	20	17.7	447	22.4	14.4%
4 BROMOFLUORO BENZENE	PID	42.7	20	20.9	800	40.0	6.3%	20	21.0	752	37.6	11.9%

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER

**APPENDIX C**

**SUMMARY OF SOIL-VAPOR RESULTS**  
**ALL LONG-TERM SAMPLING EVENTS**  
**COMPLETED TO DATE**



## APPENDIX C

**SUMMARY OF SOIL-VAPOR RESULTS**  
**ALL LONG-TERM SAMPLING EVENTS COMPLETED TO DATE**  
(Concentrations in µg/L-vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl <sub>4</sub>	Freon 113	TCE	1,1-DCE	Other Compounds
25	20	10/19/98	VPSV-523	ND	ND	ND	ND	ND
25	20	3/8/99	VPSV-641	ND	ND	ND	ND	ND
25	20	10/4/99	VPSV-749	ND	ND	ND	ND	ND
25	20	1/17/00	VPSV-918	ND	ND	ND	ND	ND
25	40	10/19/98	VPSV-524	ND	ND	ND	ND	ND
25	40	3/8/99	VPSV-642	ND	ND	ND	ND	ND
25	40	10/4/99	VPSV-750	ND	ND	ND	ND	ND
25	40	1/17/00	VPSV-919	ND	ND	ND	ND	ND
25	60	10/19/98	NS	P	P	P	P	P
25	60	3/8/99	NS	P	P	P	P	P
25	60	10/4/99	NS	P	P	P	P	P
25	60	1/17/00	NS	P	P	P	P	P
25	85	10/19/98	VPSV-525	83	ND	ND	ND	ND
25	85	3/8/99	VPSV-643	14	ND	ND	ND	ND
25	85	10/4/99	NS	P	P	P	P	P
25	85	1/17/00	NS	P	P	P	P	P
25	100	10/19/98	NS	P	P	P	P	P
25	100	3/8/99	NS	P	P	P	P	P
25	100	10/4/99	VPSV-751	ND	ND	ND	ND	ND
25	100	1/17/00	NS	P	P	P	P	P
25	120	10/19/98	VPSV-526	119	ND	ND	ND	ND
25	120	3/8/99	VPSV-644	ND	ND	ND	ND	ND
25	120	10/4/99	VPSV-752	ND	ND	ND	ND	ND
25	120	1/17/00	NS	P	P	P	P	P
25	145	10/19/98	VPSV-527	286 J	152 J	ND	ND	ND
25	145	10/19/98	VPSV-528(DUP)	285	147	ND	ND	ND
25	145	3/8/99	VPSV-645	4.1	ND	5.5	ND	ND
25	145	3/8/99	VPSV-646(DUP)	3.9	ND	5.6	ND	ND
25	145	10/4/99	VPSV-753	ND	ND	ND	ND	ND

## APPENDIX C

**SUMMARY OF SOIL-VAPOR RESULTS**  
**ALL LONG-TERM SAMPLING EVENTS COMPLETED TO DATE**  
(Concentrations in µg/L-vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl <sub>4</sub>	Freon 113	TCE	1,1-DCE	Other Compounds
25	145	10/4/99	VPSV-754(DUP)	ND	ND	ND	ND	ND
25	145	1/17/00	VPSV-920	1.0	ND	ND	ND	ND
25	165	10/19/98	VPSV-529	217 J	233 J	ND	ND	ND
25	165	3/8/99	NS	W	W	W	W	W
25	165	10/4/99	NS	P	P	P	P	P
25	165	1/17/00	NS	P	P	P	P	P
25	180	10/19/98	VPSV-530	118	133	ND	ND	ND
25	180	3/8/99	VPSV-647	ND	ND	1.1	ND	ND
25	180	10/4/99	VPSV-755	ND	2.2	ND	ND	ND
25	180	1/17/00	VPSV-921	1.0	1.5	ND	ND	ND
25	190	10/19/98	VPSV-531	124	71	1.6	ND	ND
25	190	3/8/99	VPSV-648	ND	ND	ND	ND	ND
25	190	10/4/99	VPSV-756	ND	ND	ND	ND	ND
25	190	1/17/00	VPSV-922	1.2	ND	ND	ND	ND
25	190	1/17/00	VPSV-923(DUP)	1.1	ND	ND	ND	ND
26	20	10/19/98	NS	P	P	P	P	P
26	20	3/8/99	NS	P	P	P	P	P
26	20	10/4/99	NS	P	P	P	P	P
26	20	1/17/00	NS	P	P	P	P	P
26	35	10/19/98	VPSV-532	ND	ND	ND	ND	ND
26	35	3/8/99	VPSV-649	ND	ND	ND	ND	ND
26	35	10/4/99	VPSV-757	10	ND	1.5	ND	ND
26	35	1/17/00	VPSV-924	ND	ND	ND	ND	ND
26	55	10/19/98	VPSV-533	ND	ND	ND	3.9	ND
26	55	10/19/98	VPSV-534(DUP)	ND	ND	ND	4.2	ND
26	55	3/8/99	NS	P	P	P	P	P
26	55	10/4/99	NS	P	P	P	P	P
26	55	1/17/00	NS	P	P	P	P	P

## APPENDIX C

**SUMMARY OF SOIL-VAPOR RESULTS**  
**ALL LONG-TERM SAMPLING EVENTS COMPLETED TO DATE**  
(Concentrations in µg/L-vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl <sub>4</sub>	Freon 113	TCE	1,1-DCE	Other Compounds
26	80	10/19/98	VPSV-535	74	ND	4.4	6.7	ND
26	80	3/8/99	NS	W	W	W	W	W
26	80	10/4/99	NS	P	P	P	P	P
26	80	1/17/00	NS	P	P	P	P	P
26	100	10/19/98	NS	P	P	P	P	P
26	100	3/8/99	NS	P	P	P	P	P
26	100	10/4/99	NS	P	P	P	P	P
26	100	1/17/00	NS	P	P	P	P	P
26	115	10/19/98	VPSV-536	153 J	ND	1.2	3.0	ND
26	115	3/8/99	VPSV-650	50	ND	ND	ND	ND
26	115	10/4/99	VPSV-758	1.7	ND	ND	ND	ND
26	115	1/17/00	VPSV-925	6.9	ND	ND	ND	ND
26	140	10/19/98	VPSV-537	167 J	7.9	ND	1.6	ND
26	140	3/8/99	VPSV-651	2.5	ND	ND	ND	ND
26	140	3/8/99	VPSV-652(DUP)	2.7	ND	ND	ND	ND
26	140	10/4/99	VPSV-759	5.4	ND	1.9	ND	ND
26	140	1/17/00	VPSV-926	11	1.2	1.7	1.1	1.5 (Chloroform)
26	160	10/20/98	VPSV-538	81	ND	ND	ND	ND
26	160	3/8/99	VPSV-653	2.8	ND	ND	ND	ND
26	160	10/5/99	VPSV-761	5.0	2.2	1.8	ND	ND
26	160	1/17/00	VPSV-927	11	2.9	1.8	1.3	1.3 (Chloroform)
26	180	10/20/98	VPSV-539	72	ND	ND	ND	ND
26	180	3/9/99	VPSV-654	ND	ND	2.6	ND	ND
26	180	10/5/99	VPSV-762	2.9	3.0	6.5	ND	ND
26	180	1/17/00	VPSV-928	5.4	3.5	5.7	ND	ND
26	180	1/17/00	VPSV-929(DUP)	4.9	3.6	5.5	ND	ND
26	195	10/20/98	VPSV-540	83	ND	1.4	ND	ND
26	195	10/20/98	VPSV-541(DUP)	95	ND	1.3	ND	ND
26	195	3/9/99	VPSV-655	ND	ND	1.7	ND	ND

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**SUMMARY OF SOIL-VAPOR RESULTS**  
**ALL LONG-TERM SAMPLING EVENTS COMPLETED TO DATE**  
(Concentrations in µg/L–vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl <sub>4</sub>	Freon 113	TCE	1,1-DCE	Other Compounds
26	195	10/5/99	NS	P	P	P	P	P
26	195	1/17/00	NS	P	P	P	P	P
27	20	10/20/98	VPSV-542	ND	ND	ND	ND	ND
27	20	3/9/99	VPSV-656	ND	ND	ND	ND	ND
27	20	10/5/99	VPSV-763	ND	ND	ND	ND	ND
27	20	1/18/00	VPSV-930	ND	ND	ND	ND	ND
27	35	10/20/98	NS	W	W	W	W	W
27	35	3/9/99	NS	W	W	W	W	W
27	35	10/5/99	NS	W	W	W	W	W
27	35	1/18/00	VPSV-931	ND	ND	ND	ND	ND
27	60	10/20/98	VPSV-543	ND	49	ND	ND	ND
27	60	3/9/99	VPSV-657	ND	5.1	ND	ND	ND
27	60	3/9/99	VPSV-658(DUP)	ND	5.4	ND	ND	ND
27	60	10/5/99	VPSV-764	ND	2.5	ND	ND	ND
27	60	1/18/00	VPSV-932	ND	3.4	ND	ND	ND
27	85	10/20/98	VPSV-544	7.4	61	ND	ND	ND
27	85	3/9/99	VPSV-659	ND	ND	ND	ND	ND
27	85	10/5/99	VPSV-765	ND	ND	ND	ND	ND
27	85	10/5/99	VPSV-766(DUP)	ND	ND	ND	ND	ND
27	85	1/18/00	VPSV-933	3.0	2.6	ND	ND	ND
27	100	10/20/98	VPSV-545	193 J	188 J	ND	ND	ND
27	100	10/20/98	VPSV-546(DUP)	203	169	ND	ND	ND
27	100	3/9/99	VPSV-660	11	ND	ND	ND	ND
27	100	10/5/99	VPSV-767	5.2	ND	ND	ND	ND
27	100	1/18/00	VPSV-934	13	1.4	ND	ND	ND
27	100	1/18/00	VPSV-935(DUP)	15	1.7	ND	ND	ND
27	120	10/20/98	VPSV-547	110	215	ND	ND	ND
27	120	3/9/99	VPSV-661	ND	ND	ND	ND	ND
27	120	10/5/99	VPSV-768	1.3	ND	ND	ND	ND

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**SUMMARY OF SOIL-VAPOR RESULTS**  
**ALL LONG-TERM SAMPLING EVENTS COMPLETED TO DATE**  
(Concentrations in µg/L-vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl <sub>4</sub>	Freon 113	TCE	1,1-DCE	Other Compounds
27	120	1/18/00	VPSV-936	1.6	ND	ND	ND	ND
27	140	10/20/98	VPSV-548	161	268	1.2	ND	ND
27	140	3/9/99	VPSV-662	60	19	ND	ND	ND
27	140	10/5/99	VPSV-769	6.2	1.2	ND	ND	ND
27	140	1/18/00	VPSV-937	10	2.1	ND	ND	ND
27	160	10/20/98	VPSV-549	189	212	ND	ND	ND
27	160	3/9/99	VPSV-663	ND	ND	ND	ND	ND
27	160	3/9/99	VPSV-664(DUP)	ND	ND	ND	ND	ND
27	160	10/5/99	VPSV-770	ND	ND	ND	ND	ND
27	160	1/18/00	VPSV-938	2.5	ND	ND	ND	ND
27	180	10/20/98	VPSV-550	155	265	ND	ND	ND
27	180	3/9/99	NS	P	P	P	P	P
27	180	10/5/99	VPSV-771	12	2.1	4.0	ND	ND
27	180	10/5/99	VPSV-772(DUP)	12	1.9	4.5	ND	ND
27	180	1/18/00	VPSV-939	27	2.8	2.6	ND	ND
27	205	10/20/98	VPSV-551	413 J	133	ND	ND	ND
27	205	10/20/98	VPSV-552(DUP)	446	130	ND	ND	ND
27	205	3/9/99	VPSV-665	9.5	ND	2.1	ND	ND
27	205	10/5/99	VPSV-773	4.8	2.2	ND	ND	ND
27	205	1/18/00	VPSV-940	11	5.4	2.9	ND	1.2 (Freon 11)
27	205	1/18/00	VPSV941(DUP)	9.2	5.3	2.2	ND	1.2 (Freon 11)
28	20	10/21/98	VPSV-565	ND	ND	ND	ND	ND
28	20	3/11/99	VPSV-675	ND	ND	ND	ND	ND
28	20	3/11/99	VPSV-676(DUP)	ND	ND	ND	ND	ND
28	20	10/6/99	VPSV-783	ND	ND	ND	ND	ND
28	20	10/6/99	VPSV-784(DUP)	ND	ND	ND	ND	ND
28	20	1/18/00	VPSV-942	ND	ND	ND	ND	ND
28	45	10/21/98	VPSV-566	ND	ND	ND	ND	ND
28	45	3/11/99	NS	P	P	P	P	P

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**SUMMARY OF SOIL-VAPOR RESULTS**  
**ALL LONG-TERM SAMPLING EVENTS COMPLETED TO DATE**  
(Concentrations in µg/L-vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl <sub>4</sub>	Freon 113	TCE	1,1-DCE	Other Compounds
28	45	10/6/99	NS	P	P	P	P	P
28	45	1/18/00	NS	P	P	P	P	P
28	65	10/21/98	NS	P	P	P	P	P
28	65	3/11/99	NS	P	P	P	P	P
28	65	10/6/99	NS	P	P	P	P	P
28	65	1/18/00	NS	P	P	P	P	P
28	80	10/21/98	VPSV-567	22	ND	ND	ND	ND
28	80	3/11/99	VPSV-677	ND	ND	ND	ND	ND
28	80	10/6/99	VPSV-785	ND	ND	ND	ND	ND
28	80	1/18/00	VPSV-943	ND	ND	ND	ND	ND
28	105	10/21/98	VPSV-568	210 J	127	ND	ND	ND
28	105	3/11/99	VPSV-678	ND	ND	ND	ND	ND
28	105	10/6/99	VPSV-786	ND	ND	ND	ND	ND
28	105	1/18/00	VPSV-944	1.1	ND	ND	ND	ND
28	120	10/21/98	VPSV-569	438 J	429 J	ND	ND	ND
28	120	10/21/98	VPSV-570(DUP)	451 J	403 J	ND	ND	ND
28	120	3/11/99	NS	P	P	P	P	P
28	120	10/6/99	NS	P	P	P	P	P
28	120	1/18/00	NS	P	P	P	P	P
28	140	10/21/98	NS	P	P	P	P	P
28	140	3/11/99	NS	P	P	P	P	P
28	140	10/6/99	NS	P	P	P	P	P
28	140	1/18/00	NS	P	P	P	P	P
28	160	10/21/98	NS	P	P	P	P	P
28	160	3/11/99	NS	P	P	P	P	P
28	160	10/6/99	NS	P	P	P	P	P
28	160	1/18/00	NS	P	P	P	P	P
32	25	10/26/98	VPSV-597	ND	ND	ND	ND	ND
32	25	3/16/99	VPSV-711	ND	ND	ND	ND	ND

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**SUMMARY OF SOIL-VAPOR RESULTS**  
**ALL LONG-TERM SAMPLING EVENTS COMPLETED TO DATE**  
(Concentrations in µg/L-vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl <sub>4</sub>	Freon 113	TCE	1,1-DCE	Other Compounds
32	25	10/9/99	VPSV-812	ND	ND	ND	ND	ND
32	25	1/21/00	VPSV-984	ND	ND	ND	ND	ND
32	40	10/26/98	VPSV-598	ND	ND	ND	ND	ND
32	40	3/16/99	VPSV-712	ND	ND	ND	ND	ND
32	40	3/16/99	VPSV-713(DUP)	ND	ND	ND	ND	ND
32	40	10/9/99	VPSV-813	ND	ND	ND	ND	ND
32	40	10/9/99	VPSV-814(DUP)	ND	ND	ND	ND	ND
32	40	1/21/00	VPSV-985	ND	ND	ND	ND	ND
32	55	10/26/98	VPSV-599	ND	ND	ND	ND	ND
32	55	10/26/98	VPSV-600(DUP)	ND	ND	ND	ND	ND
32	55	3/16/99	VPSV-714	ND	ND	ND	ND	ND
32	55	10/9/99	VPSV-815	ND	ND	ND	ND	ND
32	55	1/21/00	VPSV-986	ND	ND	ND	ND	ND
32	70	10/26/98	VPSV-601	ND	ND	ND	ND	ND
32	70	3/16/99	VPSV-715	ND	ND	ND	ND	ND
32	70	10/9/99	VPSV-816	ND	3.9	ND	ND	ND
32	70	1/21/00	VPSV-987	ND	2.7	ND	ND	ND
32	90	10/26/98	VPSV-602	ND	ND	ND	ND	ND
32	90	3/16/99	VPSV-716	ND	ND	ND	ND	ND
32	90	10/9/99	VPSV-817	ND	ND	ND	ND	ND
32	90	1/21/00	VPSV-988	ND	ND	ND	ND	ND
32	90	1/21/00	VPSV-989(DUP)	ND	ND	ND	ND	ND
32	115	10/26/98	NS	P	P	P	P	P
32	115	3/16/99	NS	P	P	P	P	P
32	115	10/9/99	NS	P	P	P	P	P
32	115	1/21/00	NS	P	P	P	P	P
32	135	10/26/98	VPSV-603	ND	ND	ND	ND	ND
32	135	3/16/99	NS	P	P	P	P	P
32	135	10/9/99	NS	P	P	P	P	P

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**SUMMARY OF SOIL-VAPOR RESULTS**  
**ALL LONG-TERM SAMPLING EVENTS COMPLETED TO DATE**  
(Concentrations in µg/L-vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl <sub>4</sub>	Freon 113	TCE	1,1-DCE	Other Compounds
32	135	1/21/00	NS	P	P	P	P	P
32	155	10/26/98	VPSV-604	14	193 J	ND	ND	ND
32	155	3/16/99	VPSV-717	6.8	259	ND	ND	ND
32	155	3/16/99	VPSV-718(DUP)	7.5	257	ND	ND	ND
32	155	10/9/99	VPSV-818	28	78	ND	ND	ND
32	155	1/21/00	VPSV-990	22	51	ND	ND	ND
32	180	10/26/98	VPSV-605	110	144	4.9	ND	ND
32	180	10/26/98	VPSV-606(DUP)	125	138	6.4	ND	ND
32	180	3/16/99	VPSV-719	ND	ND	2.1	ND	ND
32	180	10/9/99	VPSV-819	1.6	ND	ND	ND	ND
32	180	10/9/99	VPSV-820(DUP)	1.7	ND	ND	ND	ND
32	180	1/21/00	VPSV-991	1.6	ND	1.0	ND	ND
32	195	10/26/98	VPSV-607	88	193 J	3.2	ND	ND
32	195	3/16/99	VPSV-720	3.5	ND	8.8	ND	ND
32	195	10/9/99	VPSV-821	ND	ND	ND	ND	1.5 (Chloroform)
32	195	1/21/00	VPSV-992	ND	ND	ND	ND	ND
33	20	10/21/98	VPSV-553	ND	ND	ND	ND	ND
33	20	3/11/99	VPSV-666	ND	ND	ND	ND	ND
33	20	10/6/99	VPSV-774	ND	2.3	ND	ND	ND
33	20	1/19/00	VPSV-945	ND	4.2	ND	ND	ND
33	40	10/21/98	VPSV-554	12	87	6.3	25	ND
33	40	3/11/99	VPSV-667	7.1	102	5.4	21	ND
33	40	10/6/99	VPSV-775	3.7	67	8.9	47	ND
33	40	1/19/00	VPSV-946	6.1	86	7.7	38	1.0 (1,1,1-TCA)
33	40	1/19/00	VPSV-947(DUP)	6.0	92	6.6	39	1.1 (1,1,1-TCA)
33	60	10/21/98	VPSV-555	89	1.3	4.3	12	ND
33	60	3/11/99	VPSV-668	11	ND	2.5	8.8	ND
33	60	10/6/99	VPSV-776	6.6	2.4	1.7	4.8	ND
33	60	1/19/00	VPSV-948	14	4.1	2.1	5.9	ND



## APPENDIX C

**SUMMARY OF SOIL-VAPOR RESULTS**  
**ALL LONG-TERM SAMPLING EVENTS COMPLETED TO DATE**  
(Concentrations in µg/L-vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl <sub>4</sub>	Freon 113	TCE	1,1-DCE	Other Compounds
33	85	10/21/98	VPSV-556	140	ND	2.8	8.3	ND
33	85	3/11/99	VPSV-669	44	ND	1.5	5.6	ND
33	85	3/11/99	VPSV-670(DUP)	40	ND	1.1	5.1	ND
33	85	10/6/99	VPSV-777	19	4.5	ND	3.3	ND
33	85	10/6/99	VPSV-778(DUP)	22	4.7	ND	3.3	ND
33	85	1/19/00	VPSV-949	33	7.0	ND	4.7	ND
33	105	10/21/98	VPSV-557	191 J	ND	2.4	6.8	ND
33	105	10/21/98	VPSV-558(DUP)	204	ND	2.5	7.4	ND
33	105	3/11/99	VPSV-671	32	ND	ND	ND	ND
33	105	10/6/99	VPSV-779	38	13	ND	4.4	ND
33	105	1/19/00	VPSV-950	69	18	ND	4.3	ND
33	120	10/21/98	VPSV-559	141	ND	2.2	6.4	ND
33	120	3/11/99	VPSV-672	57	ND	ND	3.7	ND
33	120	10/6/99	VPSV-780	64	17	1.1	4.1	ND
33	120	1/19/00	VPSV-951	101	17	ND	6.5	ND
33	140	10/21/98	VPSV-560	179 J	ND	ND	7.9	ND
33	140	3/11/99	VPSV-673	ND	ND	ND	ND	ND
33	140	10/6/99	VPSV-781	8.6	3.3	ND	ND	2.9 (Chloroform)
33	140	1/19/00	VPSV-952	19	6.7	ND	1.5	5.6 (Chloroform)
33	140	1/19/00	VPSV-953(DUP)	17	6.5	ND	1.3	5.4 (Chloroform)
33	160	10/21/98	VPSV-561	94	ND	ND	8.6	ND
33	160	3/11/99	NS	W	W	W	W	W
33	160	10/6/99	NS	P	P	P	P	P
33	160	1/19/00	NS	P	P	P	P	P
33	180	10/21/98	VPSV-562	67	ND	ND	6.8	ND
33	180	3/11/99	NS	W	W	W	W	W
33	180	10/6/99	NS	P	P	P	P	P
33	180	1/19/00	NS	P	P	P	P	P

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**SUMMARY OF SOIL-VAPOR RESULTS**  
**ALL LONG-TERM SAMPLING EVENTS COMPLETED TO DATE**  
(Concentrations in µg/L-vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl <sub>4</sub>	Freon 113	TCE	1,1-DCE	Other Compounds
33	200	10/21/98	VPSV-563	78	ND	1.3	5.9	ND
33	200	10/21/98	VPSV-564(DUP)	77	ND	1.1	5.8	ND
33	200	3/11/99	VPSV-674	1.3	ND	ND	ND	ND
33	200	10/6/99	VPSV-782	ND	ND	ND	ND	ND
33	200	1/19/00	VPSV-954	1.8	ND	ND	ND	ND
34	20	10/22/98	VPSV-583	ND	ND	ND	ND	ND
34	20	3/12/99	VPSV-691	ND	ND	ND	ND	ND
34	20	10/7/99	VPSV-799	ND	ND	ND	ND	ND
34	20	1/20/00	VPSV-969	ND	ND	ND	ND	ND
34	35	10/22/98	VPSV-584	ND	ND	ND	ND	ND
34	35	3/12/99	VPSV-692	ND	ND	ND	ND	ND
34	35	10/7/99	VPSV-800	ND	ND	ND	ND	ND
34	35	1/20/00	VPSV-970	4.7	ND	ND	ND	ND
34	35	1/20/00	VPSV-971(DUP)	4.5	ND	ND	ND	ND
34	50	10/22/98	VPSV-585	ND	ND	ND	ND	ND
34	50	3/12/99	VPSV-693	ND	ND	ND	ND	ND
34	50	3/12/99	VPSV-694(DUP)	ND	ND	ND	ND	ND
34	50	10/5/99	NS	W	W	W	W	W
34	50	1/20/00	NS	P	P	P	P	P
34	65	10/22/98	VPSV-586	4.5	ND	ND	ND	ND
34	65	3/15/99	VPSV-695	ND	ND	ND	ND	ND
34	65	10/8/99	VPSV-801	ND	ND	ND	ND	ND
34	65	10/8/99	VPSV-802(DUP)	ND	ND	ND	ND	ND
34	65	1/20/00	VPSV-972	ND	ND	ND	ND	ND
34	80	10/22/98	VPSV-587	6.1	ND	ND	ND	ND
34	80	10/22/98	VPSV-588(DUP)	6.0	ND	ND	ND	ND
34	80	3/15/99	VPSV-696	ND	ND	ND	ND	ND
34	80	10/8/99	VPSV-803	ND	ND	ND	ND	ND
34	80	1/20/00	VPSV-973	ND	ND	ND	ND	ND

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**SUMMARY OF SOIL-VAPOR RESULTS**  
**ALL LONG-TERM SAMPLING EVENTS COMPLETED TO DATE**  
(Concentrations in µg/L-vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl <sub>4</sub>	Freon 113	TCE	1,1-DCE	Other Compounds
34	95	10/23/98	VPSV-589	28	ND	ND	ND	ND
34	95	3/15/99	VPSV-697	ND	ND	ND	ND	ND
34	95	10/8/99	VPSV-804	ND	ND	ND	ND	ND
34	95	1/20/00	VPSV-974	ND	ND	ND	ND	ND
34	108	10/23/98	VPSV-590	157 J	62	ND	ND	ND
34	108	3/15/99	VPSV-698	43	ND	ND	ND	ND
34	108	10/8/99	VPSV-805	8.2	ND	ND	ND	ND
34	108	1/20/00	VPSV-975	14	ND	ND	ND	ND
34	118	10/23/98	VPSV-591	154 J	82	ND	ND	ND
34	118	3/15/99	VPSV-699	111	ND	ND	ND	ND
34	118	3/15/99	VPSV-700(DUP)	116	ND	ND	ND	ND
34	118	10/8/99	VPSV-806	52	2.5	ND	1.3	5.1 (Chloroform)
34	118	1/20/00	VPSV-976	53	4.4	ND	1.5	4.0 (Chloroform)
34	118	1/20/00	VPSV-977(DUP)	48	4.2	ND	1.5	3.3 (Chloroform)
35	20	10/22/98	VPSV-571	ND	ND	ND	ND	ND
35	20	3/12/99	VPSV-679	ND	ND	ND	ND	ND
35	20	10/7/99	VPSV-787	ND	ND	ND	ND	ND
35	20	1/20/00	VPSV-960	ND	ND	ND	ND	ND
35	35	10/22/98	VPSV-572	ND	ND	ND	ND	ND
35	35	3/12/99	VPSV-680	ND	ND	ND	ND	ND
35	35	10/7/99	VPSV-788	ND	ND	ND	ND	ND
35	35	1/20/00	VPSV-961	ND	ND	ND	ND	ND
35	50	10/22/98	VPSV-573	ND	ND	ND	ND	ND
35	50	3/12/99	VPSV-681	ND	ND	ND	ND	ND
35	50	3/12/99	VPSV-682(DUP)	ND	ND	ND	ND	ND
35	50	10/7/99	VPSV-789	ND	ND	ND	ND	ND
35	50	10/7/99	VPSV-791(DUP)	ND	ND	ND	ND	ND
35	50	1/20/00	NS	P	P	P	P	P

## APPENDIX C

**SUMMARY OF SOIL-VAPOR RESULTS**  
**ALL LONG-TERM SAMPLING EVENTS COMPLETED TO DATE**  
(Concentrations in µg/L-vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl <sub>4</sub>	Freon 113	TCE	1,1-DCE	Other Compounds
35	60	10/22/98	VPSV-574	ND	ND	ND	ND	ND
35	60	3/12/99	VPSV-683	ND	ND	ND	ND	ND
35	60	10/7/99	VPSV-790	ND	ND	ND	ND	ND
35	60	1/20/00	VPSV-962	ND	ND	ND	ND	ND
35	80	10/22/98	VPSV-575	18	36	ND	ND	ND
35	80	10/22/98	VPSV-576(DUP)	20	37	ND	ND	ND
35	80	3/12/99	VPSV-684	ND	ND	ND	ND	ND
35	80	10/7/99	VPSV-792	ND	ND	ND	ND	ND
35	80	1/20/00	VPSV-963	ND	ND	ND	ND	ND
35	95	10/22/98	VPSV-577	45	48	ND	ND	ND
35	95	3/12/99	VPSV-685	6.2	4.9	ND	ND	ND
35	95	10/7/99	VPSV-793	1.6	ND	ND	ND	ND
35	95	1/20/00	VPSV-964	1.3	ND	ND	ND	ND
35	95	1/20/00	VPSV-965(DUP)	1.5	ND	ND	ND	ND
35	110	10/22/98	VPSV-578	65	47	ND	ND	ND
35	110	3/12/99	VPSV-686	1.5	ND	ND	ND	ND
35	110	10/7/99	VPSV-794	ND	ND	ND	ND	ND
35	110	1/20/00	VPSV-966	ND	ND	ND	ND	ND
35	125	10/22/98	VPSV-579	74	54	ND	ND	ND
35	125	3/12/99	VPSV-687	1.8	ND	ND	ND	ND
35	125	3/12/99	VPSV-688(DUP)	1.5	ND	ND	ND	ND
35	125	10/7/99	VPSV-795	ND	1.5	ND	ND	ND
35	125	10/7/99	VPSV-796(DUP)	ND	1.5	ND	ND	ND
35	125	1/20/00	VPSV-967	ND	1.4	ND	ND	ND
35	140	10/22/98	VPSV-580	125	64	ND	ND	ND
35	140	3/12/99	VPSV-689	17	4.2	ND	ND	ND
35	140	10/7/99	VPSV-797	13	19	ND	ND	ND
35	140	1/20/00	VPSV-968	8.5	15	2.4	ND	ND

## APPENDIX C

**SUMMARY OF SOIL-VAPOR RESULTS**  
**ALL LONG-TERM SAMPLING EVENTS COMPLETED TO DATE**  
 (Concentrations in µg/L-vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl <sub>4</sub>	Freon 113	TCE	1,1-DCE	Other Compounds
35	155	10/22/98	VPSV-581	59	61	2.4	ND	ND
35	155	10/22/98	VPSV-582(DUP)	63	68	2.8	ND	ND
35	155	3/12/99	VPSV-690	3.2	ND	7.7	ND	ND
35	155	10/7/99	VPSV-798	13	17	9.0	ND	ND
35	155	1/20/00	NS	P	P	P	P	P
36	20	10/23/98	NS	P	P	P	P	P
36	20	3/17/99	NS	P	P	P	P	P
36	20	10/8/99	NS	P	P	P	P	P
36	20	1/19/00	NS	P	P	P	P	P
36	35	10/23/98	VPSV-592	9.2	ND	ND	ND	ND
36	35	3/17/99	VPSV-733	149	ND	18	ND	37 (1,1,1-TCA)
36	35	10/8/99	VPSV-807	48	ND	27	2.0	2.6 (Chloroform)
36	35	1/19/00	VPSV-955	89	1.2	23	3.3	33 (1,1,1-TCA)
36	55	10/23/98	VPSV-593	17	ND	ND	ND	2.8 (Chloroform)
36	55	10/23/98	VPSV-594(DUP)	16	ND	ND	ND	55 (1,1,1-TCA)
36	55	3/17/99	VPSV-734	191 J	ND	2.9	ND	1.1 (Chloroform)
36	55	10/8/99	VPSV-809	153	1.3	61	9.2	1.1 (Chloroform)
36	55	1/19/00	VPSV-956	178	2.3	44	7.0	98 (1,1,1-TCA)
36	75	10/23/98	VPSV-595	22	31	ND	ND	2.3 (Chloroform)
36	75	3/17/99	VPSV-735	4.7	ND	ND	ND	106 (1,1,1-TCA)
36	75	3/17/99	VPSV-736(DUP)	4.6	ND	ND	ND	3.8 (Chloroform)
36	75	10/8/99	VPSV-810	30	3.9	2.2	2.3	1.0 (Chloroform)
								1.2 (Chloroform)
								7.6 (1,1,1-TCA)
								1.2 (Freon 11)

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**SUMMARY OF SOIL-VAPOR RESULTS**  
**ALL LONG-TERM SAMPLING EVENTS COMPLETED TO DATE**  
(Concentrations in µg/L-vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl <sub>4</sub>	Freon 113	TCE	1,1-DCE	Other Compounds
36	75	1/19/00	VPSV-957	66	4.6	5.0	3.8	11 (Chloroform) 26 (1,1,1-TCA) 1.3 (Freon 11)
36	92	10/23/98	VPSV-596	20	29	ND	ND	4.0 (Chloroform)
36	92	3/17/99	VPSV-737	11	ND	ND	ND	2.1 (Chloroform)
36	92	10/8/99	VPSV-811	20	5.8	1.4	2.6	15 (Chloroform) 1.3 (1,1,1-TCA)
36	92	1/19/00	VPSV-958	24	8.1	ND	2.4	14 (Chloroform) 2.0 (1,1,1-TCA)
36	92	1/19/00	VPSV-959(DUP)	23	8.2	ND	2.6	16 (Chloroform) 1.7 (1,1,1-TCA)
37	25	10/26/98	VPSV-608	ND	ND	ND	ND	ND
37	25	3/16/99	VPSV-721	ND	ND	ND	ND	ND
37	25	10/9/99	VPSV-822	ND	ND	ND	ND	ND
37	25	1/21/00	VPSV-978	ND	ND	ND	ND	ND
37	40	10/26/98	VPSV-609	24	ND	1.2	ND	ND
37	40	3/16/99	VPSV-722	4.3	ND	1.7	ND	ND
37	40	10/9/99	VPSV-823	2.1	ND	ND	ND	ND
37	40	1/21/00	VPSV-979	2.8	1.1	ND	ND	ND
37	60	10/26/98	VPSV-610	43	ND	ND	ND	ND
37	60	3/16/99	VPSV-723	4.0	ND	ND	ND	ND
37	60	3/16/99	VPSV-724(DUP)	3.8	ND	ND	ND	ND
37	60	10/9/99	VPSV-824	ND	ND	ND	ND	ND
37	60	1/21/00	VPSV-980	ND	ND	ND	ND	ND
37	60	10/9/99	VPSV-824	ND	ND	ND	ND	ND
37	80	10/26/98	VPSV-611	64	51	2.3	ND	ND
37	80	10/26/98	VPSV-612(DUP)	60	48	2.4	ND	ND
37	80	3/17/99	VPSV-725	1.1	ND	1.6	ND	ND
37	80	10/9/99	VPSV-825	1.6	ND	ND	ND	ND

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**SUMMARY OF SOIL-VAPOR RESULTS**  
**ALL LONG-TERM SAMPLING EVENTS COMPLETED TO DATE**  
(Concentrations in µg/L-vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl <sub>4</sub>	Freon 113	TCE	1,1-DCE	Other Compounds
37	80	10/9/99	VPSV-826(DUP)	1.9	ND	ND	ND	ND
37	80	1/21/00	VPSV-981	1.9	ND	ND	ND	ND
37	100	10/26/98	VPSV-613	62	57	3.5	ND	ND
37	100	3/17/99	VPSV-726	10	10	5.1	ND	ND
37	100	10/9/99	VPSV-827	12	1.8	3.1	ND	1.6 (Chloroform)
37	100	1/21/00	VPSV-982	15	3.0	3.4	1.2	1.7 (Chloroform)
37	100	1/21/00	VPSV-983(DUP)	13	3.1	2.6	1.3	1.5 (Chloroform)
37	120	10/27/98	VPSV-614	32	ND	6.1	ND	ND
37	120	3/17/99	VPSV-727	1.9	ND	2.6	ND	ND
37	120	10/9/99	VPSV-828	19	12	4.0	2.6	3.6 (Chloroform)
37	120	1/22/00	VPSV-993	8.8	3.7	3.8	1.7	1.6 (Freon 11) 1.9 (Chloroform)
37	140	10/27/98	VPSV-615	30	37	4.5	ND	ND
37	140	3/17/99	VPSV-728	3.0	ND	1.8	ND	ND
37	140	10/10/99	VPSV-829	3.0	1.8	ND	1.7	ND
37	140	1/22/00	VPSV-994	4.1	2.6	ND	1.4	ND
37	140	1/22/00	VPSV-995(DUP)	4.3	2.5	ND	1.2	ND
37	155	10/27/98	VPSV-616	26	47	2.3	ND	ND
37	155	3/17/99	VPSV-729	4.4	ND	1.4	ND	ND
37	155	3/17/99	VPSV-730(DUP)	4.5	ND	1.8	ND	ND
37	155	10/10/99	VPSV-830	6.0	1.5	1.6	ND	ND
37	155	1/22/00	VPSV-996	5.8	2.2	ND	1.3	1.1 (Freon 11)
37	170	10/27/98	VPSV-617	23	38	3.0	ND	ND
37	170	3/17/99	VPSV-731	5.8	5.4	1.4	ND	ND
37	170	10/10/99	VPSV-831	6.5	2.0	2.3	1.9	1.1 (Freon 11)
37	170	10/10/99	VPSV-832(DUP)	6.4	2.1	1.9	2.4	1.1 (Freon 11)
37	170	1/22/00	VPSV-997	6.0	2.3	1.3	1.6	1.1 (Freon 11)
37	185	10/27/98	VPSV-618	12	6.5	2.2	ND	ND
37	185	10/27/98	VPSV-619(DUP)	12	6.8	1.7	ND	ND

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**SUMMARY OF SOIL-VAPOR RESULTS**  
**ALL LONG-TERM SAMPLING EVENTS COMPLETED TO DATE**  
(Concentrations in µg/L-vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl <sub>4</sub>	Freon 113	TCE	1,1-DCE	Other Compounds
37	185	3/17/99	VPSV-732	9.3	18	3.5	ND	ND
37	185	10/10/99	VPSV-833	7.4	2.8	4.4	1.8	ND
37	185	1/22/00	VPSV-998	11	5.2	3.4	1.9	1.1 (Freon 11)
38	25	10/27/98	VPSV-620	ND	ND	ND	ND	ND
38	25	3/18/99	VPSV-738	ND	ND	ND	ND	ND
38	25	10/10/99	VPSV-834	ND	ND	ND	ND	ND
38	25	1/22/00	VPSV-999	ND	ND	ND	ND	ND
38	45	10/27/98	VPSV-621	5.6	ND	ND	ND	ND
38	45	3/18/99	VPSV-739	ND	ND	ND	ND	ND
38	45	10/10/99	VPSV-835	ND	ND	ND	ND	ND
38	45	1/22/00	VPSV-1000	ND	ND	ND	ND	ND
38	45	1/22/00	VPSV-1001(DUP)	ND	ND	ND	ND	ND
38	65	10/27/98	VPSV-622	15	57	2.2	ND	ND
38	65	3/18/99	VPSV-740	ND	ND	ND	ND	ND
38	65	10/10/99	VPSV-836	ND	ND	ND	ND	ND
38	65	1/22/00	VPSV-1002	ND	ND	ND	ND	ND
38	80	10/27/98	VPSV-623	11	74	1.6	ND	ND
38	80	10/27/98	VPSV-624(DUP)	15	56	2.1	ND	ND
38	80	3/18/99	VPSV-741	ND	ND	1.4	ND	ND
38	80	3/18/99	VPSV-742(DUP)	ND	ND	1.3	ND	ND
38	80	10/10/99	VPSV-837	ND	ND	ND	ND	ND
38	80	10/10/99	VPSV-838(DUP)	ND	ND	ND	ND	ND
38	80	1/22/00	VPSV-1003	ND	ND	ND	ND	ND
38	95	10/27/98	NS	W	W	W	W	W
38	95	3/18/99	NS	W	W	W	W	W
38	95	10/10/99	NS	W	W	W	W	W
38	95	1/22/00	NS	P	P	P	P	P
38	110	10/27/98	VPSV-625	13	43	1.4	ND	ND
38	110	3/18/99	VPSV-743	ND	ND	ND	ND	ND



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**SUMMARY OF SOIL-VAPOR RESULTS**  
**ALL LONG-TERM SAMPLING EVENTS COMPLETED TO DATE**  
(Concentrations in µg/L-vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl <sub>4</sub>	Freon 113	TCE	1,1-DCE	Other Compounds
38	110	10/10/99	VPSV-839	9.3	5.8	1.7	ND	1.7 (Chloroform) 1.2 (Freon 11)
38	110	1/22/00	VPSV-1004	8.8	6.0	1.5	ND	1.7 (Chloroform)
38	125	10/27/98	VPSV-626	18	81	1.8	ND	ND
38	125	3/18/99	VPSV-744	2.9	ND	ND	ND	ND
38	125	10/10/99	VPSV-840	3.2	3.6	ND	ND	ND
38	125	1/22/00	VPSV-1005	4.5	4.6	ND	ND	ND
38	140	10/27/98	VPSV-627	18	67	1.9	ND	ND
38	140	3/18/99	VPSV-745	8.6	4.5	1.9	ND	ND
38	140	10/10/99	VPSV-841	6.6	3.4	ND	ND	1.9 (Chloroform) 1.6 (Freon 11)
38	140	1/22/00	NS	W	W	W	W	W
38	155	10/27/98	VPSV-628	17	75	1.8	ND	ND
38	155	3/18/99	VPSV-746	4.9	5.0	2.0	ND	ND
38	155	10/10/99	VPSV-842	6.7	3.6	1.2	1.8	1.1 (Chloroform)
38	155	1/22/00	VPSV-1006	6.6	4.0	1.0	1.3	1.3 (Chloroform) 1.5 (Freon 11)
38	155	1/22/00	VPSV-1007(DUP)	6.6	4.1	1.0	1.3	1.5 (Chloroform) 1.5 (Freon 11)
38	170	10/27/98	VPSV-629	22	103	3.0	ND	ND
38	170	10/27/98	VPSV-630(DUP)	24	112	3.4	ND	ND
38	170	3/18/99	VPSV-747	12	24	4.4	ND	ND
38	170	3/18/99	VPSV-748(DUP)	11	24	4.4	ND	ND
38	170	10/10/99	VPSV-843	8.1	4.9	3.9	1.4	1.1 (Freon 11)
38	170	10/10/99	VPSV-844(DUP)	5.6	3.5	2.9	1.3	1.1 (Freon 11)
38	170	1/22/00	VPSV-1008	6.7	6.3	3.2	1.4	1.0 (Freon 11)
39	20	10/28/98	VPSV-631	ND	ND	ND	ND	ND
39	20	3/15/99	VPSV-701	ND	ND	ND	ND	ND
39	20	10/11/99	VPSV-845	ND	ND	ND	ND	ND

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**SUMMARY OF SOIL-VAPOR RESULTS**  
**ALL LONG-TERM SAMPLING EVENTS COMPLETED TO DATE**  
(Concentrations in µg/L-vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl <sub>4</sub>	Freon 113	TCE	1,1-DCE	Other Compounds
39	20	1/23/00	VPSV-1009	ND	ND	ND	ND	ND
39	35	10/28/98	VPSV-632	ND	ND	ND	ND	ND
39	35	3/15/99	VPSV-702	ND	ND	ND	ND	ND
39	35	10/11/99	VPSV-846	ND	ND	ND	ND	ND
39	35	1/23/00	VPSV-1010	ND	ND	ND	ND	ND
39	50	10/28/98	VPSV-633	ND	ND	ND	ND	ND
39	50	3/15/99	VPSV-703	ND	ND	ND	ND	ND
39	50	10/11/99	VPSV-847	ND	ND	ND	ND	ND
39	50	1/23/00	VPSV-1011	ND	ND	ND	ND	ND
39	70	10/28/98	VPSV-634	ND	ND	ND	ND	ND
39	70	3/15/99	VPSV-704	ND	ND	ND	ND	ND
39	70	10/11/99	VPSV-848	ND	ND	ND	ND	ND
39	70	1/23/00	VPSV-1012	ND	ND	ND	ND	ND
39	70	1/23/00	VPSV-1013(DUP)	ND	ND	ND	ND	ND
39	85	10/28/98	VPSV-635	3.7	66	1.5	ND	ND
39	85	10/28/98	VPSV-636(DUP)	3.9	78	1.6	ND	ND
39	85	3/15/99	VPSV-705	ND	38	ND	ND	ND
39	85	3/15/99	VPSV-706(DUP)	ND	39	ND	ND	ND
39	85	10/11/99	VPSV-849	6.3	48	1.4	ND	ND
39	85	10/11/99	VPSV-850(DUP)	7.7	47	2.5	ND	ND
39	85	1/23/00	VPSV-1014	5.8	44	1.7	ND	ND
39	100	10/28/98	VPSV-637	7.9	77	3.3	ND	ND
39	100	3/15/99	VPSV-707	1.2	73	1.4	ND	ND
39	100	10/11/99	VPSV-851	9.0	46	3.3	ND	ND
39	100	1/23/00	VPSV-1015	7.6	51	2.3	ND	ND
39	110	10/28/98	VPSV-638	9.8	67	4.7	ND	ND
39	110	3/15/99	VPSV-708	1.8	37	3.4	ND	ND
39	110	10/11/99	VPSV-852	12	55	3.2	ND	ND
39	110	1/23/00	VPSV-1016	11	52	2.8	ND	ND

## APPENDIX C

**SUMMARY OF SOIL-VAPOR RESULTS**  
**ALL LONG-TERM SAMPLING EVENTS COMPLETED TO DATE**  
 (Concentrations in µg/L-vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl <sub>4</sub>	Freon 113	TCE	1,1-DCE	Other Compounds
39	120	10/28/98	VPSV-639	6.5	50	10	ND	ND
39	120	3/15/99	VPSV-709	ND	7.0	15	ND	ND
39	120	10/11/99	VPSV-853	4.9	16	17	ND	ND
39	120	1/23/00	NS	P	P	P	P	P
39	130	10/28/98	VPSV-640	6.2	50	15	ND	ND
39	130	3/15/99	VPSV-710	ND	5.2	12	ND	ND
39	130	10/11/99	VPSV-854	2.0	9.0	15	ND	ND
39	130	1/23/00	VPSV-1017	1.5	7.9	10	ND	ND

**Notes:**

bgs – Below ground surface.

DUP – Duplicate samples.

J – Estimated concentration; result exceeded calibration range.

ND – Not detected.

NS – Not sampled.

P – Sampling port plugged.

W – Sampling port inundated with water.